THE FAUNA OF BRITISH INDIA CEYLON AND BURMA.

INCLUDING THE WHOLE OF

THE INDO-CHINESE SUB-REGION.

Published under the patronage of the Secretary of State for India.

EDITED BY LIEUT. COL. R. B. S. SEWELL, C.I.E., Sc.D., F.R.S., 1.M.S. (ret.).

REPTILIA and AMPHIBIA.

VOL. III.—SERPENTES.

BY

MALCOLM A. SMITH.

With 166 figures in the text.

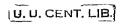
LONDON:

TAYLOR AND FRANCIS, RED LION COURT. FLEET ST.

*Issued December 1943.**

1961.

Price Rs. 40/- or 60 sh.





PRINTED BY TAYLOR AND PRANCIS, LTD , RED LION COURT, FIRET STREET

Reprinted by Photo-Licho Process as the Survey of India Offices (H.L.O.).

INTRODUCTORY NOTE

The volume III on Serpents in the Reptilia and Amphibia group by Dr. Malcolm A. Smith in the Fauna of British India series - ronamed as the Fauna of India series since the Independence of India in 1947 - was published in the midst of Second World War in London. in December 1943. Apart from a few hundred copies which were issued or distributed at the time, the stock of volumes printed off by Messrs. Taylor and Francis of London were destroyed by fire during the War. In order to meet the widespread demand for the volume, the Government of India decided to issue the present photolitho reproduction of the volume. However, as the map originally issued with the volume has become out-ofdate, it has been replaced by a revised one prepared by the Directorate of Map Publication, Survey of India, Dehra Dun.

M. L. ROONWAL,

Director,

Zoological Survey of India.

CALCUTTA, the 17th August, 1957.

CONTENTS

					•							Page
Author's Preface							•		•	٠		¥
Systematic Index												víi
introduction:												
Structure .											•	3
Habits												21
Zoo-geograph	v											22
Evolution an	•	llass	ific	atio	n.							26
Preservation						ı of	Sp	ecin	ens	٠.		29
Descriptive M												31
Bibliography					ion	,				٠	•	35
SERPENTES												39
Map of the Indian	AN	n I	NDO	-CH	INE	se]	Hu	ı D	1STI	uci	s.	524
ADDENDUM ,												526
NOTE ON THE HARD	w	CKE	. Co	LLE	CTI	OM						527
Note on Russell's								٠				531
BIBLIOGRAPHY				_								533
Alphabetical Ind	ex		•							•	•	568
Formus Men on To			477	(dex	77 AV	z .						

AUTHOR'S PREFACE.

This volume was completed five years ago, but the difficulties of publication due to the war have delayed its appearance until now. Fortunately, very little has been added to our knowledge of Indian snakes in the intervening years, and what has been written that is of value has been incorporated in the book during its progress through the printer's hands.

The general plan and scope of the volume are the same as before, and an account of the regions dealt with and the geographical divisions, will be found in the Introduction to Volume I.

Some 400 species of snakes are now known to inhabit the area covered by this work; 389 species and 17 subspecies are here described (see also page 282). Mr. Boulenger's volume, published in 1890, contained 264 species; he did not, however, include the whole of the Indo-Chinese sub-region.

Most of the work in connection with this volume has been done in the British Museum (Natural History), where the collection of Indian material is very large. In addition I have examined the entire collections belonging to the Indian Museum, Calcutta, and the Bombay Natural History Society, and I must thank the authorities of those Institutions for sending their material to me in London. Both these collections have already been critically dealt with by Colonel Frank Wall, and his labours in this respect have greatly eased my task. Indian herpetologists owe Colonel Wall a great debt of gratitude for his work on snakes. During his 30 years' service in the country he infected others with his enthusiasm and love of the subject, and it is due to him more than any other man that our knowledge of Indian snakes today is so complete. His collection of skulls and his extensive notebooks have been presented by him to the British Museum.

The very large collection of anakes made by Dr. R. Bourret in French Indo China is now in Paris, and through the kindness of Monsteur P. Ingel I have been able to examine it Unfortunately when compiling his volume on the makes of that region (page 529-1976) Dr. Bourret made no attempt to compare his specimens with typical material, in consequence 1 find myself unable to agree with many of his conclusions.

My thanks are due also to Dr. L. D. Brongerma (Museum of Natural Huttor), Leaden) Miss. Denis Cochna (United States National Museum) Dr. P. E. P. Deraniyagala (Curator of the Colombo Museum) and Jir Arthur Loverrige (Museum of Comparative Zool gy Harvard) for the loan of material, and to Mr. H. W. Parker of the British Museum (Natural Huttory) for his valuable help and criticism on many occasions,

Most of the illustrations in this book are new and have been drawn under my direction by Miss E. C. Humphreys

Finally, I thank Coi Seymour Sewell, my Editor for his supervision of the whole volume

MALCOLM SMITH

October 1943

SYSTEMATIC INDEX

p	age	1	Page
Order SQUAMATA	39	Gen. 6. Pleotrurus Dumeril.	71
Suborder SERPENTES	39	29. perroteti Dum. & Bib 30. guentheri Beddome	71 72
Fam. 1. Typhlopidæ	41	31. aureus Beddome	72
Gen. 1. Typhlops Oppel	43	32. canaricus Beddomc	72
	46	0 # 11 11 0 1	
1. porrectus Stoliczka 2. floweri Boulenger	46	Gen. 7. Uropeltis Cuvier	73
3. braminus Daudin	46	33. ellioti Gray	75
4. psammeces Günther	48	34. nitidus Beddome	76
5. albiceps Boulenger	48	35. ocellatus Beddome	76
6. thurstoni Boettger	49	36. dindigalensis Beddome.	77
7. jerdoni Boulenger	50	37. beddomei Günther	78
8. leucomelas Boulenger	50	38. macrorhynchus Bed-	
9. tenuicollis Peters	50	dome	78
10. diardi Schlegel	51	39. wood-masoni Theobald.	79 79
11. oatesi Boulenger	53	40. macrolepis Peters	80
12. bothriorhynchus Günther	53	41. ceylanicus Cuvier 42. arcticeps Günther	81
13. tindalli Smith	53	43. rubromaculatus Bed-	01
14. bcddomei Boulenger	54	dome	81
15. oligolepis Wall	55	44. rubrolineatus Günther	82
16. mirus Jan	55	45. phipsoni Mason	82
17. ceylonicus Smith	55	46. myhendræ Beddome	83
18. andamanensis Stoliczka	56	47. broughami Beddome	83
19. acutus Dum. & Bib	56	48. maculatus Beddome	83
Fam. 2. Leptotyphlopidæ	59	49. petersi Beddome	84
Gen. 2. Leptotyphlops		50. liura Günther	84
Fitzinger	60	51. pulneyensis Beddome	85
<u> </u>	60	52. grandis Beddome	85
20. macrorhynchus Jan 21. blanfordi Boulenger	61	53. melanogaster Gray	86
*		54. phillipsi Nicholls	87
Fam. 3. Uropeltidæ	61	Gen. 8. Rhinophis Hemprich	87
Gen. 3. Melanophidium Günther	65	55. blythi Kelaart	88
		56, drummondhayi Wall	89
22. punctatum Beddomc	66	57. sanguineus Beddome	89
23. bilineatum Beddome	66 67	58. homolepis Hemprich	90
24. wynaudense Beddomc	67	59. forgusonianus Boulenger	90
Gen. 4. Platyplectrurus		60. philippinus Cuvier	91
Günther	67	61. travancoricus Boulenger	91
25. trilineatus Beddome	68	62. punctatus Müller	92
26. madurensis Beddome	69	63. oxyrhynchus Schneider.	92
Gen. 5. Teretrurus Beddome.	69	Gen. 9. Pseudotyphlops	
27. sanguineus Beddome	69	Schlegel	93
28. rhodogaster Wall	70	64. philippinus Cuvier	93

1	84°				166
Farn 4 Anilida	94	85	fremata G	roy	144
Gen 10 Cylnimpin Ha er	91 '	*5	radiate t	aklani	145
65 rufus Louvest	21	2,	faroline	IA S Alam	1 349
tie macriatus i sa	94		before I	med 5	344
(ii) mid Savenie	. ,		Senutra I		150
Faro 5 Xanopeltiam	98		bot-mos		15*
on II Xenopelt a fform		61	castone	Boulenow	15"
All II Verrales to the	100	2:	mail-md	orf'i Flori'	++ 153 155
67 anicol t R scard	111		(caristata	Marker	
of different to state		,	نذولينط	erra Comb	185
fam a Boldm	100		s leverand I manda i	11 62 na Comior	157
Gen 12 Python Dowl n	105		or Page		158
68 nolum « Le »	106				159
69 ret un u Schn fer	113		4 m second		167
(en l3 Frys Dawl a	111		is protone,		
70 marcus Chand	212		n, *3 Zaox		163
71 john Rusell	113	1 10	(A) CATUDAD	us Girilar	184
74 Julia Transis		1 1	ol migrom	arginatns i	Blyth 165
Fam 7 Calmbrid≥	114	6	n 14 Colu	her I see	166
g blam Dertacense	115	1 1	00 tentro		
Gen. 14 Parens Hagter	116	ŧ.	e // thodas	miret	165
72 margantophorus Jan	1117		104 Fatelu		169
73 macularus Theoluld	118	' 1	los faserol	atus Sia	10
74 montecula Conter	114	: 1	loo meet	n Crimina	171
75 hampton Bouleager 76 carmatus Bou	12		107 Tavel	rest Menet	n/a 177
	-	٠,	108 diede	ran Beki pri	173
Gen 18 Hapkopels ra D	· 12	. l	100 MPON	tam horina	gre 175
77 hoa Bose	ï	: I (Con. *5 Y	neletha o	anther 176
5 hfam Xevoperative	-	. }	J Derw	constant e	Nor 176
		٠,١	Geor es D	pheedrys 1	ternor 177
Con. 16 Venodermen I	Krin L	23 \			
78 Ja ansers Pernham		23			
Gen. 17 Stolsenkart Je		25 [6 20	- Boulenge	181
79 khasirista Jenios		176	334 6	laopeltia Fi	langer [8]
Gen, 18 Achalmus Pet	rre i	12a l	110 the	satus Gérali Serku Selan	162
80 rufescena Bouleng		126			164
Gen 19 Fashrice Sm		1-1			
61. klom Sm th	24	i-s			
		1	Jen are	sptus Thee	old 186
Subfam Acrormone v.		121	Cen. 28	Contia Br	and &
Gen 20 Arrochardus	nem	131	121 pe	rrice And	187
99 Javaniciu Horne	teds	12*	122 10	cmahoni k	A27 198
83 granulatus Schre	order	132	Gen. 29	Lytothyn	thus Peters 183
Subfam Conumny		125			
Gen. 21 Elsphe I to	UN/Ter	129		arackuztni () naymundi	2200
84 presus Blyth		143	1 123 8	Pina	
se preside digue		-10	•		193

SYSTEMATIC INDEX.

Page	Page
Gen. 30. Rhynchophis Moc-	171. tristis $Daudin \dots 248$
quard 192	172. subocularis Boulenger 249
126. boulengeri Mocquard 193	173. caudolineata Gray 250
	Gen. 35. Chrysopelea Boie 250
Gen. 31. Coronella Laurenti. 193	
127. brachyura Günther 195	174. ornata Shaw 251
	175. taprobanica Smith 254
Gen. 32. Oligodon Boie 195	176. paradisi <i>Boie</i> 254
128. cyclurus Cantor 202	Gen. 36. Lycodon Boie 255
129. chinensis Günther 206	l
130. juglandifer Wall 207	177. subcinctus Boie 258
131. macrurus Angel 207	178. travancoricus Beddome. 259 179. laoensis Günther 259
132. formosanus Günthen 208)
133. tæniatus Günther 208	180, kundni <i>Smith</i> 260 181, jara <i>Shaw</i> 260
134. quadrilineatus $Jan \dots 210$	
135. barroni $Smith$ 210	182. striatus <i>Shaw</i>
136. albocinctus Cantor 211	184. mackinnoni Wall 263
137. melazonotus Wall 213	
138. splendidus Günther 214	185. aulicus <i>Linn</i> 263 186. fasciatus <i>Anderson</i> 266
139. cinereus Gunther 215	187. paucifasciatus Rendahl. 267
140. joynsoni <i>Smith</i> 218	101. patit ilasciavits rendum . 201
141. woodmasoni Sclater 218	Gen. 37. Cercaspis Wagler 267
142. torquatus Boulenger 219	188. carinatus Kuhl 268
143. theobaldi Günther 220	
144. cruentatus Günther 221	Gen. 38. Dinodon Dum. &
145. planiceps Boulenger 221	Bi b
146. venustus Jerdon 222	189. septentrionalis Günther. 270
147. travancoricus Beddome. 223	190. gammici Blanford 271
148. tæniolatus Jerdon 223	191. flayozonatus Pope 271
149. arnensis Shaw 225	Con 20 Danasalamus Can
150. sublineatus Dum. & Bib. 227	Gen. 39. Dryocalamus Gün.
151. calamarius Linn 228	ther 272
152. erythrorhachis Wall 229	192. nympha Daudin 274
153. melaneus <i>Wall</i> 229	193. davisoni Blanford 274
154. affinis Günther 230	194. gracilis Günther 275
155. brevicauda Günther 231	Gen. 40. Sibynophis Fitzinger 276
156. erythrogaster Boulenger 232	195. collaris Gray 277
157. catenata <i>Blyth</i> 232 158. mcdougalli <i>Wall</i> 234	196. chinensis Günther 278
158. medougalli Wall 234 159. dorsalis Gray & Hard-	197. subpunctatus Dum. &
wicke 234	Bib.
160. hamptoni Boulenger 235	198. bistrigatus Günther 279
161. lacroixi Angel & Bourret 236	199. grahami Boulenger 280
	200. sagittarius Cantor 280
Gen. 33. Calamaria Boie 236	_
162. pavimentata Dum. &	Gen. 41. Natrix Laurenti 281
Bib. 238	201. nuchalis Boulenger 284
163. uniformis Smith 238	202. venningi <i>Wall</i> 286
164. septentrionalis Boulen-	203. sauteri Boulenger 287
ger 239	204. atemporalis Bourret 287
Gen. 34. Ahætulla Link 239	205. parallela Boulenger 288
70- 1	206. nicobariensis Sclater 289
165. alietulla Linn. 242	207. khasiensis Boulenger 289
166. cyanochloris Wall 244	208. modesta Günther 290
167. grandoculis Boulenger . 245 168. gorei Wall	209. peali Sclater
169. bifrenalis Boulenger 246	210. xenura Wall
170. caudolineolata Günther. 247	211. plinetitiati Gunner 292 212. pisoator Schneider 293
VOL. III.	
· VII. 111.	b

SISTEMATIC INDEX.

x

1.	€		wite.
	94	Gen 51 Opustholingus	330
214 bell le Stol cate	38	Gunther	
215 percarmata floulenger	33		331
"16 angel Bourret	ro l	246 premax llarus Angel	332
"17 humalayana (nther)	too I	247 laseralu Boulenger	332
"18 ac binu ata Schlopel .	100 }	est undersoru Boulenger	222
	103	240 anencer Sm th	233
	105	*50 1scob Angel & Burret	333
2º1 bedrome Ounther	106	25f annamenus Bourret	334
	307		
	31 6	Gen. 32 Asp dura Wagler	334
2º4. chrysarga Host	3 1 1	252 brachyprebus Bose	335
225 ca chroma Baueret	309	252 por Gunther	336
		254 trechyprocta Cope	237
Gen 42 Balanophu Sm 2k	310	255 drammond hayi	
225 cevlonens a Gunther	210	Boulenger	233
and to promite a Quantity	***	*58 guenthers Ferguson	339
Gen 43 Preudorenodon			
Boylenort	311	Gen 33 Blythu Throbald	334
327 macrops Blyth	311	257 reticulata Bloth	339
228 bambuacola Fost	313		
	314	Gest 54 Haplocercus Cunthe	r 340
324 pope Greent	31-	*58 peylosienas Gunther	341
Gen. 44 Macroputhedon		On or Valueby Bullions	341
Boulenger	314	Ben 35 Xylorhia Beddoma 259 perrotet Dum it Bib	312
230 phymbrolor Cantor	314	"60 stemorhamelres Dienther	313
The bigging out factor	314	On Bremitting to the Control	
Gen. 45 Parashabdophes		Gen. 38 Bo ga F temper	344
Beterret	316	*61 multimaculate Bose	347
231 chapsens a Bourret	316		348
car compress a goanne	•••	#83 tripopale Schmider	349
Gen 46 Yenochrophus		284 goknol Gray	331
Ganther	311	*63 res lonennis Quather	331
232 persongueter Cardon	311	66 cumeun sate Well	353
and the magnetic Caloni		267 barnes Gunther	354
Gen 47 Atret um Cope	31:) 25% cyanca Dura, & Bib	355
233 schustosum Dondes	31	209 mult temporale Bour	Tet 356
234 yumarens a Anderso		TO THOSE TENCHES BOYS	357
291) (257
Gen. 48 Trachachium		*72, foretern Dum & Bib	
Gunsher	3.		359
*35 most cole Contor	3,		erk.
236 function H with	33	monn.	360
237 guentheri Boulenger	3	3 9"4 shannama 81-6.4	
238, tenucepe High	3	.3]	360
239 have Perucos	3	Gen 58 Panumorhus Fan	
- 1- 70: 1-1		1M/CT	341
Gen. 49 Plagrophola	_	25 275 whokam Forekal	363
Boulenger		THE COLUMN TO WELLEN	384
240 blakeways Boulenge		25 977 kngurona Boulenger	365
241 delacour Angel			366
242 puchalis Boulenger	2	279 horolatus Brundt	387
Gen. 50 Rhabdops Bould	-	27 Cen. 59 Psammodynastes	
243 pl vacous Beddome		8 Gimther	
		280 pulverulentus Bore	368
244 breoler Blyth		, and a last of the same and th	368

Page	Page
Gen. 60. Dryophis Dalman 370	309. flavicops Reinhardt 410
281. perroteti Dum. & Bib 373	310. fasciatus Schneider 411
	311. ceruleus Schneider 413
282. dispar Günther 373 283. fronticinctus Günther 374	312. ceylonicus Günther 415
	313. multicinetus Blyth 416
	314. candidus Linn 416
	315. magnimaculatus Wall
286. nasutus Lacipide 376	& Evans 417
287. pulverulentus <i>Dum</i> . & <i>Bib</i> 378	316. niger Walt 417
Bib. 378	317. lividus Cantor 418
Subfam. Homalopsinæ 379	318. walli Wall 418
Gen. 61. Enhydris Sonn. &	Gen. 71. Callophis Gray 418
Latr 380	319. melanurus Shaw 420
288. plumbes <i>Boie</i> 382	320. maculiceps Günther 420
289. enhydris Schneider 383	321. huglii Cochran 421
290. jagorii Peters 384	322. nigrescens Günther 422
291. innominata Morice 385	323. heddomoi Smith 423
292. smithi Boulenger 385	324. macclellandi Reinhardt. 423
293. longicauda Bourret 386	325. bibroni Jan 425
294. bennetti <i>Gray</i> 386	326. kelloggi Pope 426
295. chinensis <i>Gray</i> 387	30 4
296. maculosa Blanford 387	Gon. 72. Naja Laurenti 426
297. bocourti Jan 388	327. naja Linn 427
298. dussumieri Dum. & Bib. 389	328, haunah Cantor 436
299. sieboldi Schlegel 389	
Gen. 62. Homalopsis Kuhl &	Fam. 10. Hydrophiidæ 430
Hass 390	Gen. 73. Laticauda Laurenti . 442
300. buccata Linn 390	329. laticaudata Linn 442
- Decade Dimi	330. colnbrina Schneider 443
Gen. 63. Cerberus Cuvier 392	
301. rhynchops Schneider 393	Gen. 74. Aepyurus Lacépède . 445
	331, eydouxi <i>Gray</i> 445
Gen. 64. Gerardia Gray 394	Gen. 75. Kerilia Gray 446
302. prevostiana Eyd. &	332, jerdoni <i>Gray</i> 447
Gerv 394	•
Gen. 65. Fordonia Gray 396	Gen. 76. Præsentata Wall 447
303. leucobalia Schlegel 396	333. viperina Schmidt 448
Gen. 66. Cantoria Girard 397	Gen. 77. Enhydrina Gray 449
304. violacca Girard 398	334. schistosa Daudin 449
	_
Gen. 67. Bitia Gray 399	den. io. all in the
305. hydroides Gray 400	335. nigrocinctus Daudin 452
Gen. 68. Herpeton Lacepede . 400	
306. tentaculatum Lacépède. 401	
Fam. 8. Dasypeltidæ 403	339. klossi Boulenger 457 340. bituberculatus Peters 458
Gen 60 Planking 3	341: stricticollis Gunther 459
Gen. 69. Elachistodon Rein-	342. torquatus diadema
hardt 404	Günther 460
307. westermanni Reinhardt, 404	343. ornatus ornatus Gray. 460
Fam h monta.	344. lapernoides Gray 461
Fam. 9. Elapidæ 406	3d5 mamillaris Daudin 402
Gen. 70. Bungarus Daudin 407	246 complescens Shaw 400
308. bungaroides Cantor 410	347. fasciatus Schneider 464

345 parvious Sm th 349 brooker (Nauher	463		452
Gest. 79 Thalasmphia Schmid	458 458	361 sarmalion Abuck &	493
350 anomalous francis	- 1	Subfam Choratana	464
Gen. & Kalpophus Smet	467	Gen Si Ancestration Bran	
341 annandajet Loss to-	45	ture to	464
Gen 81 Lapernus Grey	192	365 himsleyanın Güetker	495
352, hardwichtt Groy	465	366 rhodostoma Bost	497
353 enrius Piner	420	367 halys Pulles	499
		264 hepitale Verrein	499
Gen. 82. Antrol & F when	471	209 Mys Lawren	500
254 stoken Gray	471	370 actitus (anther	201
		Gen 91 Trimeresum Land	
Len R3 Microcephalophia		paide	392
Lesson	472	371 maryolopu Rollow	595
355 gracilm Slow	472	3"2 ingonorephalus Seen	513
3.18 gantory Gant'es	475	# Let	506
Gen. 84 Pelamis Dirui o	4*5		508
357 pistures Line	476		
Don Parameter			830
Fam 11 Viperida	4"	376 kanlbacks 6msh 377 malalameta Jeeden	512
S. Tur 11 a i feiteren	• •		\$13
Aublara, Tresser.	(4)	3 9 strightus Orny 379 computes Smith	616
			414
Gest, 85. Assentings Studenty	MY KNO		415
258 for Bouleager	64	331 stepargers School	712
A M S Y	-	282 poprorum mus	414
Gen. 86 Tipera Zotor A	43		5(1
359 remells Share	48	354, rentors Blyck	911
360 Jebeton Jana	41	a 383 purpurromeculatos	
Gen. 87 Echia Morross	41	7 348 vrythrurus Carder	230
381 carringum Schappler	- 4		52
	4	333 labratia Fitzinger	423
Gen. 88 Pacudocerantes		and mountain a relatives.	37
Louisiger	•	MUDEADUM	
242 man - Pr - P		- I TOP TO THE OWNER OF THE OWNER OF THE OWNER OF THE OWNER OWNER OF THE OWNER	

INTRODUCTION.

The Bibliography of this Chapter is given on p. 35.

THE Serpentes or Snakes are a suborder of the order Squamata, which includes, besides the Sauria or Lizards, the extinct Pythonomorpha, Aigialosauria, and Dolichosauria. They can be distinguished from lizards by the following combination of characters:—

The two halves of the mandible are united at the symphysis by elastic ligament and are movable independently; the anterior end of the brain-case is completely, or nearly completely, closed; the vertebræ, in addition to the anterior and posterior zygapophyses, have a pair of accessory articulations dorsal to them, namely, the zygantrum and zygosphene; the body is greatly elongated and without limbs, or with merely vestiges of a hind pair; the eyes are without lids; there is no ear-opening; the tongue is elongate and more or less deeply forked, and is retractile into a basal sheath. Like the lizards the body is covered with scales, the vent transverse, and the copulatory organs paired.

The close relationship between the two groups is shown also in the peculiarly ophidian characters which have arisen independently in certain of the Saurian families. These are the ophidian type of vertebræ in the Iguanidæ; the elongation of the body and the disappearance of the limbs in the Pygopodidæ, Anguidæ, Teiidæ, Amphisbænidæ, and Scincidæ; the eye-covering in the Pygopodidæ, Teiidæ, Scincidæ, and Lacertidæ; the tongue in the Varanidæ; and the approach to the

ophidian type of ear in the Agamidæ.

About 2,500 species of snakes are known.

Much has been written upon the anatomy of snakes, but no complete account of any one species, comparable with those which have been written on the Frog, the Salamander or the Tortoise, is, as yet, available. The following general remarks on structure, habits, distribution, etc., have particular reference to the Oriental species. They deal also with the recent advances in knowledge concerning snakes, and suggest lines for further research.

VOL. III.

It has been truly said that we do not know a species until we know everything about it, its anatomy, its physiology, its development, its habits. The variations in structure in different families and genera, sometimes even in species that are placed in the same genus, have no doubt their interpretation in their varying modes of life and the correlation of the two is a fascinating study It is one that has been much neglected by the field naturalist Here is a great field of research waiting for him, for it is upon the living creature that all our theories concerning the function of structure must finally be tested

The Teeth.

Teeth are present in the majority of makes on the maxillary, palatine, pterygoid and mandibular bones, in the primitive families they may be present also upon the premaxilla. In some genera they are much reduced in number and size, but in none are they completely lost. They are not implanted in true sockets, but simply sakylored to the bone, leaving, when detached, a shallow impression. From an evolutionary standpoint the main changes in dentition have occurred on the maxillary bone, and its value for taxonomic purposes is much greater than that of any other bone of the palatomaxillary arch Its shape also and its position with regard to the other bones of the arch are sometimes of value. An accurate count of the number of teeth is important, and to do this the maxilla or the entire arch may have to be removed. cleaned, and dried, any impressions from teeth that have dropped out can then be seen. In some specimens every alternate tooth has dropped out, so that the jaw appears, on superficial examination, to postess only half the real number, There is a perpetual succession of teeth, the new ones lying in the gum on the inner aide. These replacement teeth, in different stages of development, can often be seen, sometimes as many as three or four sets lying in vertical series, one above the other Three types of teeth are distinguished namely. solid, grooved, and canaliculate Solid teeth (aglyphous) occur in all the primitive anakes, and in more than half the Colubridæ The grooved teeth of the Opisthoglyphs are confined to the last two or three maxillary teeth. They are usually larger than the others The groove is on the external or antero-external surface of the tooth , at varies considerably in depth in different species, and may be so slight that some magnification is required to see it It communicates by duct or ducts with the poison gland above. The canali culate fangs of the Proteroglypha (Elapidae) and Solenoglypha (Viperide) are found only in the front of the mouth The canal has been derived from the grooved condition by its extension into the tooth so that a horse shoe shaped condition is finally produced when seen in transverse section. The ring is then completed by filling in the gap between the two heels of the shoe, and not by union of the real structures of the tooth, namely, the dentine and enamel. How poor is this connection in the Elapidæ, in which the line of union is visible, can be shown by decaleifying the tooth, when the filling disappears and the groove is reinstated. The Cobra, in fact, can be returned to the opisthoglyphs. In the Viperidæ the union is more perfect and cannot be removed in the same way. This striking contrast between the two families is evidence not only of the separate, but also of the older, origin of the Vipers. Poison fangs, like the other teeth in the jaws, are replaced by succession. In the Viperida a cluster of three or four or more reserve teeth can often be seen; in the Elapidæ only one or two can be seen with the naked eye. There is no direct attachment of the poison duct to the fang. When it reaches the base of the tooth it expands into a small cavity in the fold of the gum, overlying the opening into the canal. The loss of the tooth, therefore, does not cause any injury to the duet, and no repair is needed. The supply of venom is always ready for the next tooth, which is almost in position before the old one is shed.

It is convenient here to state that there is no single character, except that of the poison fangs, by which to distinguish the harmless snakes from the poisonous ones. In some species (Callophis) the fang is extremely small, and usually needs some magnification to decide its nature. All the Elapidæ lack a loreal shield, but this is absent also in many harmless snakes, particularly in members of the Trachischium-Opisthotropis group. Wall, in his 'Poisonous Terrestrial Snakes of our British Indian Dominions,' has produced a very serviceable key for their identification. It would not, however, cover all those included in this work.

The Eye.

The eyes differ greatly in size, sometimes in species which belong to the same genus. They are usually free from the surrounding shields, and are covered with a transparent disc, like a watch-glass, beneath which they move. In most of the Uropeltidæ the disc is confluent with the shields which surround the eye. The evolution of the transparent disc, or "spectacle" or "window." is not clearly known. The formation of a similar covering originating in the lower cyclid of some genera of Lizards (Scincidæ, Lacertidæ) is well known, and the investigations of Schwartz-Karsten (1933) present grounds for believing that the snakes have acquired it by the

same process. Neher on the other hand (1933) gives quite a different interpretation of it. The subject has also been discussed by Walls (1934) and Verner (1930).

The pund is usually circular or vertically ell pite, only in Dryophs and its alies at theoricostal. In some generas such as those of the Trackschars-Operatoryus group it may be round or vertically elliptic and it is often difficult to decide which to call it. The variation as spears to depend upon the form of contraction at the time of death. In the Boldes the Viperdie, and in Boya it is very distingtly vertical and its

capable of contracting to a more slit

The presence of a round or vertical pupil is not necessarily correlated with durinal and noncturnal habits The Kraits (Bungaria) and Cobeas (Maps) with round pupil are expuscials and necturnal as are the Frinkpater hanks (Homalogians) on the other hand many of the Vipers (1 spera discussions) although seeking their food at night do not although seeking their food at night do not straight durinal and owing to the pounded character of its count is said to have binocular vision

Abercomby (1922) has stated that the sight of makes as not good in the daytime even in the case of durnal makes with round pupilled eyes and that those makes that hour their prey fanteed of warlaying it do so cheefly by means of the forages. I have not observed that myself in suakes of durnal habits but have noted it frequently in nocturnal makes with round pupilled eyes. Outras that I have key, food in displaying. Even now he defined in sessing their food in displaying. Even now he wing creatures as touds were struck at and missed time and again before they were family served.

An increating point concerning the vision of sinkes has recently been brought forward by Walls [1931]. He discovered that the lens of the eye was yellow in certain species colories in others and found that he could correlate the difference in color with dismail and notificial habits. The yellow coloration when present as an adaptation for the improvement of visual activity in daylight. The subject is worth further investigation particularly in such genera as Research with combine notemal habits with a round pupil.

The Ear

Stakes have neither external ear-opening typiparinative representations of a bony or semicartifiaguous rod the stapes or columnils array which extends from the fenerate sonis in the cranium to the quadrate bose. Its attachment to the former by means of the foot to the quadrate it is loosely

connected by ligamentous tissue so that considerable play is possible. Owing to its extreme slenderness this bone is usually lost when preparing skulls. It is difficult to say how

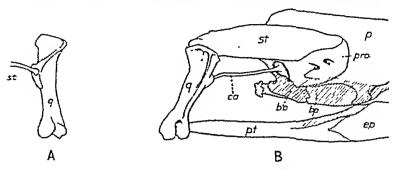


Fig. 1.—Ear-bones of Python reticulatus.

A. Attachment of stapes, st., to quadrate q., seen from the inside.

B. Auditory apparatus, seen from the right side. bo., basicccipital;
bp., basisphenoid; ca., columella auris or stapes; ep., ectopterygoid
(or transpalatine); p., parietal; pro., proetic; pt., pterygoid;
q., quadrate; st., supratemporal.

much this lack of auditory apparatus has affected their hearing, or whether they have any compensatory mechanism to make up for it, but that they can hear very well is indisputable.

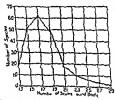
The Tongue and Jacobson's Organ.

The tongue is mainly an organ for smell, and the constant quiver and play of it that we know so well, is for the purpose of collecting scent-particles, which are then passed on to Jacobson's organ through the naso-palatine ducts. The organ lies in the roof of the mouth, enclosed in a cavity formed by the turbinal bone above and the vomer below. It is usually deeply pigmented. It is innervated by the vomero-nasal nerve, a thick trunk of fibres, a special outgrowth of the olfactory bulb (figs. 7, C and 44, C).

The Scales of the Body.

The scales on the body are usually imbricate and form straight longitudinal and oblique transverse series. Wall has called them "costal," but the word "dorsal" is a much older one and equally descriptive. The longitudinal series in the great majority of snakes are disposed in odd numbers; in Zaocys they are in even numbers; in the aquatic Acrochordus and in the Sea Snake Kolpophis annandalei they are very small and more or less granular in form, and an exact count is difficult.

The scaler way considerably in shape. They may be long and manner with pointed by an in Abravilla and Dripphis broad and last like in shape as in some species of Trinser server as broad or nearly as broad as long as in Physica and Zaory, with every gradation between these extremes in the majority of species the outer pow or rows are larger than the others, in most of those that have suffered reduction in the other in most of those that have suffered reduction in the other in calle war of equal size. In some species, a Boyra Abravilla and Invegence, the vertical sacries were considered to the same state of the same st



Fg 2 - Chart showing the variation in the number of scale rows in the Colubrate

The scales may be smooth or feebly or strongly keeted the keek are usually stronger in the makes than in the formales in both exces they are often stronger in the posterior part of the body than in the silterior Those of the hanness group of the Colubrius or most entropy, keeled than are those of the Colubrius. Dermal ossifications are unknown in wakes

The appeal puts are manufe impressions near the true of the scales they may be ungle as it Aberdito, or page of as in Elaphe sometimes both forms are to be found the analogue of analogue of the sometimes and the some state of the analogue of the can only be found by careful search. A poor unpressible can only be found by careful search. A poor unpressible better seen on a drude casel than on a set one to baset to the the right light is also ungortant. The aguiteance of these parts is not known these greatmatic importance is alight but it should not be ignored. In some cases they are of value in defining a genus, as in Contia and Liopellis; in others

they are useless as a generic character.

The number of scale-rows round the body varies considerably. The lowest is 13 (Dryocalamus, Liopellis, Calamaria); the greatest is in Python (65-75), Kolpophis (74-93), and Acrochordus (130-150). The majority of the Colubride have 15, 17 or 19 rows at mid-body, and the accompanying graph, showing the variation, is based on the species described in this volume.

The maximum number of scale-rows in the majority of snakes is at mid-body, and in most there is a reduction as the vent is approached. Considerable attention has been paid in recent years to the manner in which this reduction occurs. It may take place by absorption of the vertebral rows or of those on the sides of the body, usually the 3rd or 5th. As an addition to the description of a species the point is of value; very occasionally it may help in the differentiation of two closely allied species, as in Coluber ventromaculatus and C. rhodorhachis; that it has any higher systematic value is doubtful. The number of scale-rows at mid-body is of much greater importance than at any other part of the body. When eounts are made at the neck or hinder part of the body they should not be rigidly confined to any particular distance behind the head or in front of the vent.

The ventral shields or gastrosteges are the cnlarged scales along the mid-line of the belly. They are usually transversely enlarged, much broader than long, and occupy the whole or nearly the whole width of the belly. In the Freshwater Snakes (Homalopsinæ) they occupy about one-half the width of the body, whilst in *Xenopeltis*, the Uropeltidæ, and most of the Sea Snakes they are scarecly larger than the seales adjacent to them. In the Typhlopidæ and Leptotyphlopidæ they are not distinguishable as ventrals, the body being covered with uniformly-sized scales throughout.

In some genera, e.g. Elaphe and Lycodon, a lateral ventral kccl is present; in the arboreal Ahatulla and Chrysopelea the keel is strongly developed and is provided in addition

with a notch on its posterior border.

The subcaudals or urosteges are usually disposed in pairs. In many species which are in no way related to one another, such as Natrix, Bungarus, and Trimeresurus, some or all of the subcaudal shields may be single; the reduction usually starts at or near the vent.

The number of ventral and subcaudal shields is of considerable specific value. Owing to the shorter tail, the number of caudals is often less in the female than in the male. In some species this sexual distinction in caudal count is very marked,

e g Trimeresurus and Colomorus, and has systematic importance The number of the ventral and subcaudal ahields corresponds closely to the number of vertebre, and therefore to the number of the somutes or segments of the body.

The sual shield, the shield that covers the vent, may be divided or entire, as with the subcaudals, the paired con-

dition is the more primitive

Picardo (1931), Holtzinger Tenever (1935), and Pock-randt (1937) have drawn attention to the fact that the nucroscopic structure of the scales can show valuable specific characters

The Hmbilleus

The umbilieus is advated on the posterior part of the belly from six to ten heads lengths in front of the vent It is a long slit like scar, and occupies from two to four ventral scales. The scar is visible for some months after birth and affords a means of distinguishing very young snakes from older ones Beddard (1967) has pointed out that in the Viperide the position of the umbilieus appears to have some taxonomic value

Vestigial Limbs

No snake has a pectoral arch or even vestiges of it, but vestiges of the pelvis are found in the primitive families as shown in the Key (p 39) The vestigual bone, usually regarded as the femur, which has persisted in the Boids and



Fig. 3 -Photograph of anal region of Python molurus shewing vestignal hand limbs

Antide, terminates in a claw-like spuz and hes in a rounded hole or depression on each side of the vent In some, especially in the males, it projects beyond the opening, and can be easily seen , in others it is more deeply hidden, and must be searched for

The Vertebral Column.

The presence or absence of hypapophyses on the posterior dorsal vertebræ has long been recognized as a character which divides the Colubridæ into two main groups, the Natricine with hypapophyses, and the Colubrine, or Coronelline, without

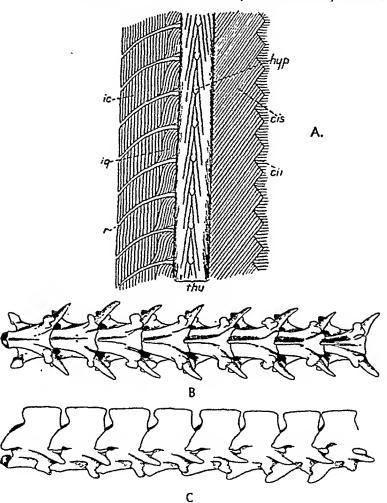


Fig. 4.—A. Ventral view of body wall of Natrix piscator. The M. costalis internus superior has been removed on the left side. B. Ventral, and C. Lateral, view of anterior dorsal vertebræ of Ptyas mucosus, showing the change from the hypophysial to the anhypophysial area.

cii., M. costalis internus inferior; cis., M. costalis internus superior; hyp., hypapophysis of vertebra; ic., M. intercostalis proprius; iq., M. intercostalis quadrangularis; r., rib; thy., M. transversohypapophyseus.

them No account of these processes however can be complete that does not include the muscles—the hi transverse hypopophyanus which are concerned with them. They can be seen at once by opening the belly along the mid line and pushing the viscors ande and form quite as effective a means of ascer taining the presence or absence of the processes as the bones themselves As seen in latrix passafor the muscle consists of two complement parallel bundles of fines one on each side of the seriebral fine the hypotophyses projecting between them Each muscle arises from the anterior agreet of the transverse process of the vertebra and passing forwards and slightly inwards is inwrited by a flat tendon into the hypernphysis four segments anterior to it Many additional fibres arise from the pouseles again aground it. At any point therefore a transverse section through the whole bandle of fibres will include four mucles The section of the muscles when contracting a multaneously on both a fee is to flex the vertebral column restrictly one safe assists the epianist nturcles of the same a de in lateral ficzion (Moestier 1935) As seen in Pipes mucous the muscle is present only in tho antenor one fifth of the body Its disappearance is effected rapidly by successive abortenings of the muscle and is completed in these or lows segments of the body it corresponds with the disappearance of the hypapophysis he hance have yet been given to describe these Ing great anatomical divisions and it is convenient that we should have them I propose the term Hypophysis for those with hyperpophysics on the presence dorsal vertebra and Anhypophysis for those without them. One would expect to find that the possession of the muscle as the Mypophysis would gree them some advantage in movement over the Ambypolytics I have so

Mosauer recognizes there main myological types among the Snakes namely the Books the Colorada and the

The Hemipenia

As already stated analyse the the huards, have poured As already organs. These he on other aids of the base of the coming distinct thickenings so that with a little practice the sex can usually be determined without desection it is the sex can industry be been about this Each organ consists of a tupe of execute traine which can be excited the quater of a powered not raine to be seen and the constitute of a table of structure small and stone of a practice at a time of a glove in pairing one one organ is busined at a time but which one is immaterial and depends upon the side the male happens to be at the time of copulation. The citernal opening for each hemipeons can be seen by i fining up the anal opening for each numbers can se seed up raing up the anal

retractor muscle, and upon the state of contraction of this muscle at the time of death depends to a considerable extent the length of the hemipenis. To examine the organ a cut should be made along the mid-line of the tail, starting just behind the vent; the hemipenes will then be seen lying side by side. They are flattened on their inner sides, more rounded externally. The descriptions given in this volume represent one of the organs lying in its natural position. The sulcus spermaticus lies along the outer wall, and to see it best the cut which opens the organ is made longitudinally down the middle of the inner wall.

Copc in 1893 arranged a classification of the snakes based on the characters of the hemipenis; Dunn in 1928, modifying Cope's scheme, made a tentative classification of the American genera of the Colubridæ. After reviewing the Oriental material described in this volume, I find myself unable to base any major classification upon the organ. As a specific character it is most valuable; in many genera also it is remarkably constant; in others, such as Trimeresurus and Oligodon, it exhibits enormous variation, even in species which in other respects appear closely allied to one another (c. g. Trimeresurus stejnegeri and T. popiorum).

In the character of the penial structure, the more generalized families of snakes approach the Sauria. In them the organ is short and thick, with convoluted folds or plicæ and without spines (*Uropeltis grandis* excepted). Evolution has led to the formation of calyces, spines, and deep bifurcation. The transition from one type to another, such as the development of spines from the non-spinous (papillose) form, or vice versa, or the production of calyces from the plicate form, is, I believe,

a comparatively small step.

The descriptions of the hemipenis in this volume have been written at different times during the last five years, and, in the absence of any standardized method, will be found to vary considerably in pattern. Many of them, based on poorly preserved material, will also need revision.

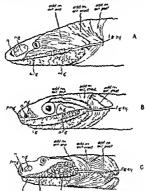
The Anal Gland.

The anal glands, anal pockets, or cloacal glands, as they are also called, are sausage-shaped structures, that lie on either side of the base of the tail and open at a right angle by a constricted orifice immediately behind the vent. They are smaller in the male than in the female. They vary considerably in size in different species and genera; in Boiga they are unusually large. They have been mistaken, at times, for the hemipenis. Their secretion is custard-like in consistency, and varies in colour in different species; usually it is offensive in odour, but in some species is said to be not unpleasant.

The glands are active at all aresons of the year Noble (1937), we king moon the accretion of the glands in North American snakes came to the conclusion that the scent had no hedenic use

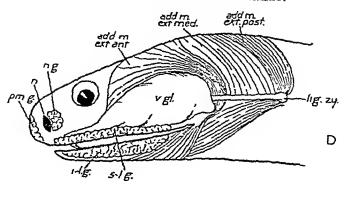
The Glands of the Head

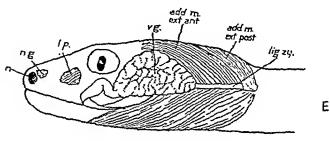
Our knowledge of the glands of the head is still very imperfect In their number form, position, and degree of

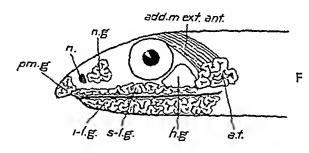


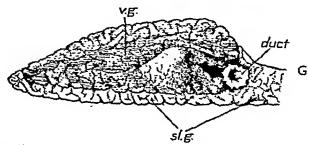
For 8 -The glands of the head : is not shown. P Coleber force prolongation of the supra-label gland is not shown process and addressor mendishes externes enterior; add ment made

adductor mandibula extensus medium odd m pas post, edductor









mandibulæ externus posterior; a.t., anterior temporal gland; duct, duct of venom.gland; h.g., Harderian gland; i-l.g., infrs, labial gland; lig.zy, ligamentum zygomaticum; n., nostril; n.g., nasal gland; pm.g., premaxillary glands; s.l.g. supralabial gland; v.g., venom gland.

development they vary greath sometimes in species in the same genus. It is stormaring maded considering the airs of the head how muck of it is receiped by them. Much more material is needed more curvey of the brad glands of any conference of the stormary of the brad glands of any one contributed to our knowledge of the salivary glands in the non prosonous maters. As excellent summary of the properties of the ventom of the poisonous makes of India, has been green by Wall (1929).

Smith and Bellairs have also reviewed the subjects dealing

with all the glands of the head (in prep)

The accompanying figures show the glands of the head The following can be recognized. A supralabial a parotid. originally derived from the supralabul a premaxillary or intermaxillary also derived from the same gland an interior labul a nasal an anterior temporal a Harderian a sublingual The suors and infralabials the premarillary the nasal and probably also the anterior temporal are salivary glands they discharge their secretion into the mouth. The paro'id in all the Oputhoglypha and in most of the well-developed Aglypha is recognizable as a gland distinct from the supralabili by its alightly darker coloration (in spirit specimens). It discharges its secretion by a separate duct into a sac at the base of the maxillary teeth (fig & G) The anterior temporal is a small first gland at the gape of the mouth its duct opening on the margin of the lip beneath the jast supralabial scale. When poorly developed and hidden by the ligamentum at gomaticum, it can be easily overlooked. It is not present in all analies As far as my examination goes" it is present in the Typhlopide Anilde some of the Borde (Erur) and some of the Colubride Thus in Colaber and Lytorhynchus it is large and well developed whereas in Piyas and Elaphs it is small and poorly developed. In Autres it appears to be absent as " is in the Homalopsinse Elapide and viperide The Harderian gland serves the eye, the masal eavity and Jacobson's Organ. In shape and size it varies enormously in different species. It consists of a flattened, branched intraorbital portion and an extraorbital one which extends poeteriorly beyond the post-frontal bone This portion may or may not be visible on removing the skin . in most makes it is hidden benesth the adductor mandibulæ externus anterior. The labual glands are strongly adherent to the skin and care must be taken in dissection that they

^{*} The c tation of a family or genus does not mean that I have examined all the species contained in st

are not removed with it. The evolution of the venom gland

is sketched on pp. 12-13.

Kellaway (1937) and Tait (1938) have shown that complete extirpation of the venom gland does not have any apparent effect upon the health of the snake.

The Vertebral Glands.

The nucho-dorsal, or vertebral, glands (Nakamura, 1935 and Smith, 1938) occur, as far as we know at present, only in some members of the genus Natrix, and in the closely allied genera Macropisthodon and Balanophis. They are present in the neck and may extend the whole length of the body and on to the base of the tail. There are two types, namely, a sacculated one composed of chains of spherical structures, and a non-sacculated one, the gland being composed of a single elongated piece of tissue.

In the first type the gland is composed of paired spherical or oval structures arranged in regular chains on either side of the vertebral line. The scales of the neck of that region are more or less distinctly modified in shape and size. The gland commences on the back of the head, a few millimetres behind the parietal shields; the first ten to twenty pairs are the largest, and these are closely apposed to one another; the succeeding glands, when they occur, are more widely separated. This type of gland is found in Natrix himalayana, N. subminiata, N. nigrocincta, N. callichroma, and Macropisthodon plumbicolor.

In the second type the scales of the neck are not altered, but on stretching the skin of that part, two clongated, naked areas can be found. The gland is a continuous piece of tissue 10 to 20 mm. in length and lies immediately beneath the naked skin. This type of gland is found in Balanophis ceylonicus, and in the Malayan members of the genus Macropisthodon. Natrix callichroma differs in having the sacculated type, but the external skin characters of the non-sacculated

type.

The gland is attached to the skin, and comes away with it when that is stripped from the body. It has neither lumen nor duct. Its secretion is formed by the breaking down of the glandular tissue, and is discharged externally by rupture of the skin covering it. It is an irritant to mucous membranes, but it is doubtful if its purpose is merely defensive. It may be concerned with courtship. In what has been termed the Natrix type of courtship, the male rubs his chin along the back of the female. The fact that the species in which this habit has been recorded do not possess the gland does not necessarily invalidate the theory.

The Nasal Cavity.

The nasal cavity is a large chamber extending from the tip of the anout to the anterior wall of the orbit. Into it project from before backwards the nasal pad the bony capsule of Jacobson sorgan and the nasal gland, the three combining to

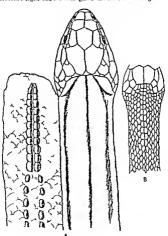


Fig 6 —A. Direction of neck of Natura suchalis showing vertebral glands B E larged nuchal scales of Natura suchalis (after Smith)

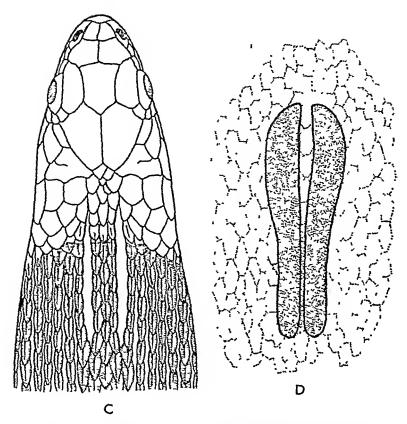


Fig. 6.—C. Neck of Macropisthodon flaviceps, showing areas of naked skin. D. Nuchal gland of M. rhodomelas as seen by reflecting the skin. The dotted lines indicate the scales seen through the skin (after Smith, P. Z. S. 1938).

produce a sinuous passage when viewed from above (fig. 7, A). The cavity is lined throughout by the olfactory membrane and differs therefore from the nasal cavity of lizards (e. g., *Lacerta*), which is divided into two vestibules, only the posterior of which is covered by olfactory membrane.

Of the three structures, the nasal pad shows the greatest variation. Mesially it is covered by the nasal cartilage, externally it forms the posterior wall of the nasal aperture and has a slit-like or rounded opening which leads into an interior chamber. As thus briefly described, it can be seen in the well-developed Colubridæ and higher families; but there are many modifications.

In the Homalopsinæ, the nostril is a crescentic slit on the upper surface of the snout and the pad projects from its vol. III.

hinder margin. The opening into the interior of the pad is large, and is directed straight forward. The whole pad can

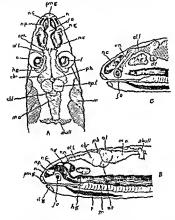


Fig. 7.—A. Horszontal and B. & C. Sagettal section through the head of Pryor motoria. To allow the vanous structures properly, the sections have been made at various levels.

oli, combilium cir., corolectus, « etc., Ag., Einderman ginal; ilig., cafradhauf pinal; pi. 60 d. 03 denobens open, fo (A) patential, portan, fo (A) patential, capen, fo (A) patential, capen, for (A) patential, capenda for (A) patential, cape

be distended and thus forms an effective valve. Closure of the nasal cavity is further effected by the glottis, which fits into the internal nares.

In the Acrochordine closure of the cavity has been effected in an entirely different manner. The nostril is circular and directed more or less forwards. There is no valve anteriorly, but closure is made by a cartilaginous flap in the roof of the mouth directed backwards and covering the internal nares.

In the Sea Snakes (Laticauda excepted, in which the nostrils are lateral) the pad springs from the anterior margin of the nostril. It consists of dense, spongy tissue and has no external orifice. As in the Homalopsine additional closure is made by

the glottis.

In the vipers Pscudocerastes and Eristocophis, in which the nostril is directed mainly forwards, the pad divides it into two parts. The lower opening leads into the nasal cavity proper, the upper into a small sae or pocket which has been called the supranasal sac. This lies immediately beneath the skin of the upper part of the head, behind the nostril (fig. 155, B), and can be seen without dissection by lifting up the skin over the upper aperture. Schmidt (1930), who first discovered this sae in Pscudocerastes, tentatively compares it with the loreal pit of the Pit Vipers. There can be little doubt that the pad is an adaptation to desert life and that its function is to act as a valve. The supranasal sac has been isolated in the process and probably serves no special purpose. The sac described by Parker (1932)* in Bitis is quite different. It is an extension outwards of the anterior portion of the nasal cavity with which it is continuous.

The nasal gland can be divided into two parts, namely, an external, which lies behind the nostril and can be seen on reflecting the skin, and an internal, which lies within the nasal cavity. This inner portion is absent or vestigial in the aquatic snakes and in some others, e. g., *Dryophis*. Its secretion is

discharged into the nasal cavity.

Sexual Variation.

Sexual dimorphism is not marked in snakes. Nevertheless, I believe that minute attention to detail will reveal characters that we do not know of to-day. The sexual variation in ventral and caudal count and in the carination of the dorsal scales has already been dealt with. In some genera (Macropisthodon, Aspidura, Opisthotropis) the dorsal scales of the male in the isehiadic region show strong, short keels or tubercles (fig. 10, D, p. 33). In Aspidura the shields covering the lower jaw, especially the genials, show minute sensory tubercles (fig. 106, p. 335).

^{*} J. Linn. Soc. xxxviii. p. 213.

Sexual dichromatism is rare in stakes, and is never distinctive. A nuttial dress as unknown. Nor do the colour changes, depending upon pavelhological of psycho-physiological stimuli, which man havids, particularly the Agamida and Luxanda, undergo during the brooding arason, occur in stakes

In the young the colour pattern as namely more word than in the shift, and mid underdeads the colour pattern may be enturely, or almost entirely, leet Those spreas (Elophe, Ophodory) which are enturely green to colour, are manily not green, but greyals or built coloured, at burth, but further information upon this point is needed. The change or colour is due to the absence of the blue, learing only the yellow in Dropolis primiss the colour is carable, and enturely yellow or enturely green induviduals are found living safe by mid-. In Elophe coperplaid the blue is absent from the tail, but not from the rest of the body. Some remarks on the evolution of colour pattern will be found under Alarier passing.

p 297
The coloration and markings of a spirit specimen will stand

out more clearly when it is immersed in a bowl of water

Regs and Young.

The majority of makes lay eggs. They are oval an shape, and untally shout two as along as broad. In those species that have long and dender bodies, e.g., distribution of Proceedings, (bey may be as much as foor times as long as broad. They are covered with a whitch or yillowish parchimentalize skin, which contains a small amount of lime. When lad, they addres to one another by means of a study fluid exercted by the ordinate. Development of the embryo winto the region before the state of the embryo winto the region of the state of th

Oviparity and viviparity have no taxonomic significance Closely allied species may produce young by either means.

as in the genera Ancistrodon and Termeresurus

During development a considerable amount of water in absorbed by the "shell," so that there is an increase in size, particularly in gurth. This immakes of eggs produced at one time by different species warnes economically. It ranges from three of four, to 72 (Incrediants symmons) and over 100 (Python molerus). Young mothers produce lesser eggs or young than those that are fully grown.

In oviparous species the embryo is provided with an eggtooth to enable it to cut through and thereby release itself from the shell at the time of birth. It can be seen projecting from the lower border of the rostral shield. It is usually shed within a few hours of birth. In the viviparous species it is much reduced in size and often indistinct, and may be shed even before birth.

Kopstein's recent work (1938) on the breeding habits of Javanese snakes has led to some interesting and remarkable discoveries. He found that sexual maturity is attained in some snakes much earlier than is generally believed. In Natrix subminiata it was reached at 13 months, in Ptyas mucosus at 20 months, in Pareas carinatus at 11 months. He also discovered that it was possible to have successive layings of fertile eggs without remating. An isolated female Boiga multimaculata laid four eggs on May 5th, 1934, and four more on January 1st, 1935. From all the eggs young ones hatched; after that only unfertilized eggs were laid.

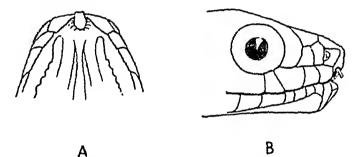


Fig. 8.—Egg-tooth of Elaphe melanura.A. Seen from below. B. Seen from the side.

A female Natrix subminiata laid five eggs on July 9th, 1934, five on October 2nd, and five on November 15th. After that, only unfertilized eggs were laid. Recent observations by American writers (Trapido, Rahn and Haines, 1940) show that the spermatozoa can be retained alive in the uterus for several months. Gestation periods, as recorded, must therefore be accepted with reserve. Copulation is not necessarily followed immediately by oyulation.

Habits.

These, in so far as they are known, are recorded under the species or genera concerned. Much, however, remains to be done upon the subject. Of the mating and breeding habits of a large number of the species we know nothing. Wall's numerous notes upon the habits of Indian snakes have been freely drawn upon for these pages, and it is due to him,

more than to any other prices, that we know as much as we do Prater (1933) has written an interesting article, mainly

upon the breeding habits of the Indian species

Observations upon courtship and the mating behaviour of snakes must necessarily be fragmentary for the opportunities of observing them in nature, can be only accidental. Devia (1837) and Noble (1837) have added to the available data, and have reviewed the whole subject. There is general agreement that the data indicate that given type of courtship behaviour are common to related groups of serves. ("Dava")

Rivalry and combat between the males—a common occurrence in lizards—may also occur in anakes McCann (1935) has recorded it of the Indian Physis mucorus, and Fleay (1937)

of the Australian Llapid, Pseudeches perphyriacus

The positions assumed for the two purposes are different in fighting, as McCano states—the anakes were entwined round one another like a twisted rope," and this posture is borne out by Fleay a photographs of the Black brake. The photograph of two Dhamans making (Frater, 1932, p. 469) in

more like the attitude assumed when fighting

The majority of makes are expansion's or noctural in their wanderings. Some species of Eupha, Colder, Playa, and Naire may be found abroad at any hour of the day when in search of food but, as far as my own observations go, only the insubers of the abovest genera Alacialia and Dropolase really appear to nevel in the tropical sunabine. In northern latitudes in the tropica, especially at the higher distributes and states and the sign as they do in colder clansies. In the south the sun, as they do in colder clansies. In the south the sun is too ferce for this parather, and in fact, observations made in recent years upon Ratileonakes in America Glossier & Lazer, Swift, Blaim & Speakinan, 1933, and by Praser in India upon different species (1976), above that direct tropical sambight, even for a short years), it fails to the sun part of the property complete the proposed property of the property of the

Zoogeography.

The problem of recogningly as to determine the origin or centre of dispersal of secure, specin, familiar, groups, and them what you like, and to ascertam their range or distribution throughout the world. Of the place of origin of many species and subspecies of makes we are in no doubt. They have areas from pre-axining species as the regions they inhabit to-day. Of the distribution of the fundier we are also ofcer, their characters are well defined, and there should be no difficulty in assigning any species to deep hose. But of the place of origin of the widely distributed familier we have no knowledge. In dealing with genera it is quite different Some of them can be recognized as compact groups of species,

the majority are in the process of evolution, and through intermediates can be linked up with closely related genera. Their characters, in consequence, cannot be clearly defined. For the purpose of zoological distribution, the large and comprehensive genera of Boulenger are in some respects more instructive than the smaller and less clearly defined ones that we accept to-day.

The species which inhabit the area dealt with in this volume fall into two categories:—I. The species that inhabit the Oriental Region and which form the majority of those de-

scribed. II. Entrants from outside regions.

The long barrier of the Himalayas in the north and the extensive sea-boards of India and Indo-China in the south, leave only three points of entry. These are:—

- 1. The desert or semi-desert eountry of N.W. India which admits the fanna of S.W. Asia—the Irano-Turanian subregion of the Palearctic. The genera mainly eoncerned here are Coluber, Contia, Lytorhynchus, Tarbophis, Psammophis, and Pseudocerastės.
- 2. Entrants from China and Yunnan. As already stated in the general discussion on zoological areas (vol. i. p. 14), the northern limit of Indo-China is not easily defined. The determining factor is climate, and in the absence of any natural boundary an arbitrary one has to be drawn. The mixing of Chinese and Indo-Chinese faunas in consequence is more general. Four genera may be mentioned in connection with this region, namely, Dinodon, the Chinese representative of Lycodon; Pseudoxenodon, derived from Natrix, but now with more species in China than in Indo-China; Achalinus, mainly Chinese, and closely related to the Indo-Chinese Fimbrios; and the Viper Azemiops few.
- 3. Entrants from the Malayan Region. The southern limit of the Indo-Chinese subregion is at the Isthmus of Kra. The mountain range which forms the backbone of the Peninsula at this point divides it into two distinct areas, namely, a wet and heavily forested country on the West, and a much drier and less heavily forested one on the East. The elimatic conditions on the West are Malayan, and in consequence the northward extension of species from Malaya has been much farther on this side than on the other.

The Andaman and Nicobar Islands belong to the Indo-Chinese subregion. All the evidence that we have, both geological and faunal, indicates that they are a continuation of the mountain range of the Arakan Yomas extending southwards from Cape Negrais in Lower Burma, and were at one time a part of the continental shelf that included also Sumatra, Java, Borneo, and a part of the Philippines.

_	-1	INTRODUCTION
	Datub tion outs de Andaman and N cobar Is	Conveil Spran Africa Bat Ind as Is and Is an
	Datub tion outs da.	of index of the control page of the control pa
ĺ	Lada	3 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
1	Vacchar	+;;]++++;++1+1+1++;++ ;++ +-
1	Andamen	+++-1:+++1++++++1+++1++++±+ +:
	Spece	The physic beams to a problem to a physical points of a physical model of a physical points of a physical point of a physical
	å	

For so small an area they are remarkably rich in the variety of their species, 6 families and 19 genera being represented. Isolation could account for the large number of indigenous forms. Of the 29 species of snakes listed, 9 are peculiar to the islands, and 2 more, namely, Natrix piscator and Bungarus cæruleus, although listed under the name of the form that inhabits India, are not quite typical and could well have been derived from an ancestor inhabiting the Indo-Chinese snbregion. The status of Boiga ceylonensis is doubtful. That Indo-China and not Malaysia was the main source from which they received their ophidian fauna is evident from a study of the accompanying list. For a fuller account of the herpetology of these Islands see Proc. Linu, Soc. (Smith, 1941).

All the families of snakes inhabit the Oriental Region. The Typhlopidæ, Leptotyphlopidæ, Boidæ, Colnbridæ, Elapidæ and Crotalinæ are cosmopolitan in their distribution; the Viperinæ are confined to the Old World, and, as pointed out long ago by Boulenger, their distribution accords elosely with that of the Lacertidæ. The Uropeltidæ and Xenopeltidæ are peculiar to the Oriental Region; the Anilidæ and Dipsadinæ to-day inhabit the Oriental and Neotropieal regions. The Hydrophiidæ being marine, and with greater facilities for dispersal, cannot be judged like the land snakes. They range from S.E. Asia to Australia and Polynesia, but the majority inhabit the Oriental seas. Of the 16 genera recognized to-day, 13 are found in Oriental waters. The Dasypeltidæ, confined to two genera and three species, are highly specialized for their particular mode of life. They inhabit Africa and Northern Bengal.

The foregoing remarks on the families will suffice also for their genera, except for the Colubridæ. The natural groups into which this family can be arranged and their relationships with other genera throughout the World are discussed with

the Key to the Colubrina on p. 138.

Three other points in connection with zoogeography deserve mention.

- 1. The families, subfamilies, and genera which occur in the Oriental and Neotropical Regions, but are absent from other parts of the World. These are the Anilidæ, Dipsadinæ, and Xenoderminæ, and the genera *Trimeresurus* and *Sibynophis*. A close parallel to this distribution is to be found in the Microhylidæ (Amphibia) but is not known in the Testudines or in the Sauria.
- 2. Five species inhabit Indo-China and the large islands of Malaysia—Borneo, Sumatra and Java—but are absent from the Malay Peninsula and Peninsular Siam. They are Python molurus, Ptyas mucosus, Boiga multimaculata, Vipera

russells, and Truncusurus allolabus. Two genera, namely Riolackaus and Opathotopus, carry this discontinuity in distribution even further north, being absent from the southern half of Indo China. Main theories to account for the peculiar distribution have been put forward. They are concerned thefly with the elevation and subsedence of land masses in that part of the world. Charact [1825] recognizes two lines of dispersal from the mainland of Asia, one through the Pluminuis the other through Bornes from Indo-China.

3 In my volume on Lizards (p. 15) I commented on the affinities of the funa of the Malayan Region with Cyclin and Southern India. Only one genus of makes, namely Cylindroptia, fast this distribution, being found in Malayais, India China, and Ceylon, but not in Pennistals India.

Evolution and Classification

Any sketch, which deals with the evolution of the makes and endeavours to trace their development from the primitive or generalized forms to the more advanced once must take into consideration certain fundamental changes in structure. The changes do not concern species, or genera, or even families, but may be regarded as trends in evolution which affect the whole subords.

1. The ability of most anakes to exallow food much exceeding their own calibre is well known. This is possible because the bones of the akull concerned with deglutinon are loosely attached to the cramum and freely movable on it betting asside the degenerate, and yet in some ways highly specialized. families of Typhlopide, Leptotyphlopide, and Uropeltide, we find that in the most generalized families the bones of the akull are more or less solidly united, the supratemporal is intercalated in the cramal wall and the quadrate, which intercalculates with it, is short and vertically placed. In the more advanced families this regulity has been overcome The maxilla has been fired from the premaxilla, the prefrontals from the masals, and m consequence the palatomaxillary arch is capable of considerable rotation outwards and forwards, each arch also can more independently of the other The loosening and lengthening of the supratemporal. and the lengthening of the quadrate, an increase which is provided for by its extension backwards, has increased enormounly the capacity of the jaw opening. This type of skull architecture is to be found in all the Colubrida and higher families Python, as representing the most complete ophidian skull known, is here shown in greater detail than any of the others figured (see fig 32, p 104)

2. The evolutionary changes in the teeth are well known. They have resulted in specialization in structure, in the conversion of the solid-toothed (aglyphous) and uniform dentition of the primitive families, still persisting in many of the Colubridæ, to the grooved posterior teeth of the Opisthoglypha and the canaliculate fangs of the Elapidæ (Proteroglypha) and Viperidæ (Solenoglypha). The Oriental Colubridæ can be sharply divided into aglyphous and opisthoglyphous forms, and, as a ready method of identification, this character is invaluable. With some of the American genera this is not possible, transitional stages being present or absent in the same genus, sometimes even in the same species. As a means of expressing stages in evolution the terms Aglypha and Opisthoglypha are useful and convenient, and in that sense they are used in this volume. They have no taxonomic Thus, the nearest relative of the opisthoglyphous value. Balanophis is the aglyphous Natrix, of the opisthoglyphous Chrysopelea, the aglyphyous Ahatulla.

Step by step with the specialization of the teeth, but not always keeping in step with it, has gone specialization of the supralabial gland. Its evolution into a venom gland is sketched in fig. 5. In Xenopellis unicolor it is a long strip of undifferentiated glandular tissue extending the whole length of the upper lip. In Ptyas mucosus a portion of the posterior part of the gland has become specialized, and can be distinguished, in preserved material, as a yellowish patch (outlined in the figure). Already in some of the opisthoglyphous Colubridæ its secretion when injected into them is toxic enough to kill small vertebrates. In Cerberus rhynchops the gland is elearly differentiated, both in colour and external lobulation, from the supralabial, and can, by dissection, be more or less

completely separated from it.

In all the Opisthoglypha this gland is distinct from the supralabial; its secretion is strongly toxic to small vertebrates and many of them kill their prey by its means. The later stages in the evolution of the gland and its final development into the highly specialized organ of the Proteroglypha (Elapidæ) and Solenoglypha (Viperidæ) can only be eonjectured. The origin of the Viperine fang through opisthoglyphous genera has been constructed by Boulenger (1896 and 1917. See also E. G. Boulenger, 1915 and Haas, 1938); of the origin of the Elapine fang we have no such indications. Boulenger's suggestion (1896) that it may have been derived from a snake with the Boædon type of dentition, in which some of the anterior teeth are enlarged and fang-like, is difficult to reconcile with our present knowledge of the evolution of the venom gland from the posterior part of the

supralabial. The separate oragons of the Viperine and Edunar fains which is suggested by their dentition is shown also in the different physiolog ral constitution and the action of the vector's hellware [1933] has penied out however, that the Australian Flapolic may have the properties of both types

3 The changes in the seek bral adjanta concern the hypapophyses of the dorsal vettebre and the muscular structures connected with them. The character was first employed by Cope and faster by Bouleager who a coording to their presence or abounce on the posterior donal vertebre arranged the genera of the Colubrium in two acress (Cat. En. 1, p. 170). Some later suthors have carried this grouping fasther and regard I om as subfamilies the hadronn—with processes—and the Coron lines—without them.

Remai process or hypapophyse are abent except quite anternoly in the dorsal rereture of all primitive stakes at high as and including most of the Bode. In some they are present in a few received vertical verifiers only in others they extend as faces the anterior one third of the body. Hendal processor, possibly homologous with the dorsal are also present on the caudal verticing. They are smally paired and their misualistic at quite different. A similar condition is to be found in most of the families of the Sarria Hypapophyses are most foundation to the families of the Sarria Hypapophyses are also (Elapsical Hydosphade Viperdie). They vary in their degree of development being stronger in the lipside.

Between these two groups low the great family of the Coulorder in which they may be present or absent. The revent discovery of Brongerma (Rid3) that in the same genus, analy? Chrispelou and results as the country of Brongerma (Rid3) that in the same genus, and the country of the country of

The arrangement of the families as given on page 39. The suportly of them are well defined and it is unlikely that for the work will alter our diffusions of them. The difficulty that always been and out did as with the Columbia. This fuge family, whose numbers during some two thresh of all the howas species of marks constitute some two thresh of all the howas species of marks constitute some two thresh of all the copy that the constitution of a few small subfamilies. Certain

natural groups are evident. and these are listed after the Key to the Colubridæ on pp. 138-9. Many of the inclusions are tentative, and later authors will no doubt supplement and modify the arrangement given here.

Preservation and Examination of Specimens.

For the preservation of snakes for Museum purposes, alcohol should be used whenever possible. Formalin, which is now so often employed on account of its greater convenience

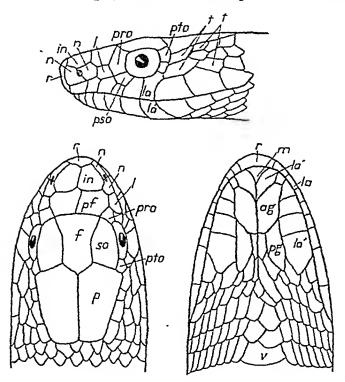


Fig. 9.—Three views of the head of Coluber ventromaculatus to explain the terminology of the head shields.

ag., anterior genials (or chin shields); f., frontal; in., internasal; l., loreal; la., supralabial; la'., infralabial; m., mental (or symphysial); n., nasal; p., parietal; pf., prefrontal; pg., posterior genials (or chin shields); pro., preocular; pso., presubocular; po., postocular; r., rostral; so., supraocular; t., anterior and posterior temporals; v., first ventral.

has many disadvantages. Its chief one is its effect upon certain colours, in particular the greens, which become blackish, and in time quite black. It tends also to "flatten out" the

blacks browns and whites so that their contrasts are dimnumbed. The reds on the other hand are preserved but only as long as the specimen remains in formalin. Specimens placed in atrong formalin harden rapidly and ultimately become brittle

Ordinary methylated spint which can be bought from any pharmacist will do This is usually 95 per cent alcohol and for use must be diluted with I part of water to 3 of spint The blue or red dye which is used to colour it will not affect the specimen nor will the turbidity which is sometimes produced when water is added. It is most important that the preservative should penetrate into the body cavity as rapidly as possible in fact it can be laid down as an axiom that the excellence of a specimen dipends upon its proper fixation in the first 24 hours Some collectors inject their preservative with a hypodermic syringe. I believe better results are obtained by making a series of small incisions along the middle of the belly or at the outer margins of the ventrals. It is particularly important where the hinder gut lies the digested food causing putrefaction very rapidly incisions at this part therefore should enter the gut and not merely the abdominal cavity The same spirit cannot be used indefinitely every specimen added will reduce its alcoholic strength and fresh (95 per cent) spirit must be added as required. If the strength is correct the specimen will become distinctly harder and more rigid within 24 hours and will continue to stiffen for several days To overcome this rigidity I have used mani pulation of the specimen for a few minutes twice daily for the first three or four days of preservation. The results were excellent the specimen remaining permanently flexible like

Commercial formains the concentrated form which the collector would carry with him is a solution containing approximately 40 per cent of formaldelyde and this figure frequently gives rise to some condision. It is usual to request to a 3 to 5 per cent solution of formalis at the correct one for preservation and these percentages refer to the commercial containing a fixed production of the containing to preservation. For the containing the containing the containing to the containing the containing

^{*} These remarks on formalm are taken from Instruct one for Collectors No 2 Rept for Amph beans and Fasher 5th Edition.

Struck Museum (Natural Hastery)

There are many ways of killing a snake, and it need hardly be said that the less the specimen is damaged, the better. The simplest way, and a very effective one, is to break the spine a short distance behind the head by a blow with a stick. One blow should be sufficient; the body will continue to give convulsive movements for some time afterwards, but for all practical purposes the snake is dead. Small snakes, and many lizards and amphibians, are extremely susceptible to nicotine, and a few drops of it placed in the mouth will kill them almost instantaneously. A small bottle of nicotine for this purpose can be obtained from most pharmacists. Large snakes -over 8 or 10 feet in length-are too bulky to be preserved in the ordinary way. They must be skinned by cutting along the whole length of the belly, leaving the head, and if possible the tail, untouched. The skin can then be preserved in spirit in the ordinary way. Dried skins are not satisfactory for Museum purposes.

I have gone at considerable length into the question of the preservation of specimens, for it is one on which many collectors take little trouble. It is obvious that the better the specimen is preserved, the more complete can any examination of it be

made afterwards.

Living colours should be noted. The reds and yellows usually fade rapidly in spirit; the browns and blacks remain. It is important to have the exact locality where a specimen was collected. If the place or village is not likely to be found on the map, its position with regard to the nearest town of note, or its position in Longitude and Latitude, should be given. Labels written in pencil will last well if they do not get chafed.

Descriptive Methods, etc.

The descriptions are based on the material examined. They include the common variations, but not the unusual ones, which are regarded as aberrations. The ventral counts, as recorded by different authors, vary so greatly, that I have relied mainly on those specimens I have seen myself. A count which has been found or has been recorded as being well outside the normal variation, is placed in brackets beside what is regarded as the normal. When examining juveniles it is well to remember that in them the eye and the frontal shield are relatively larger than in the adult.

As regards the synonyms and references for genera and species, etc., this volume follows closely the procedure adopted for the two previous ones. For convenience they are repeated

here

The references given are not intended to be in any way complete. They have been chosen in so far as they are relevant

to the text and to enable the reader to know where to look for further information

A scientific name in the synonymy when followed by an author's name without an intervening comma and the date,

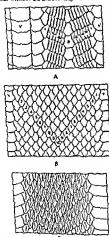


Fig. 10 (A.L.) —Realing of the body of: A Aletulla cheruita showing enlarged vertebral scales (a) the apreal puts on the oblique dorsal scales, and the interest hast of the wented should (v). B Elophe radiate, thereing normal scales. C. Pasudorranton mesorys, above ing obly a scales.

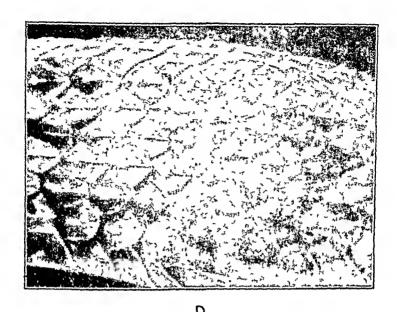


Fig. 10(D).—Ischndic region of of P. macrops, showing knobbed keels

refers to the first published mention of that name. In the case of a species the type-locality follows, and, if it is known, the name of the town in which the type is kept. A name followed by a comma and then the author's name indicates a reference subsequent to the original description. Boulenger, F. B. I.. 1890, refers to his volume of that date.

The list of common characters which follows the generic characters permits the descriptions of the species to be curtailed considerably. The generic characters cover the whole genus; the common characters apply only to the species described in this volume.

The International Rules of Zoological Nomenclature have been followed as far as their interpretation permits. It should be noted that Rule 19 was amended at the International Congress at Padua in 1930 in order to make the English version conform with the official French text *, and now reads as follows:—"The original orthography of a name is to be preserved unless an error of transcription (transliteration), a lapsus calami, or a typographical error is evident." The spellings of some disputed words therefore have been retained in accordance with classical procedure, e.g. Ancistrodon instead of Agkistrodon, Aepyurus instead of Aipysurus.

^{*} Arch. Zool, Italiano, xvi, 1932, pp. 90, 91.

Tranomials are restricted to those varieties, races or subspecies that have well-defined characters a restricted geographical range and httle or no intergradation with other races. Colour varieties that intergrade completely with others are lated in serial order. The typical pattern is described, and the names proposed for it by other authors are included.

English names are given only to those species that are common an I widely distributed. To attach a name to every

Fg II -A. Anterior B Posterior and C Lateral view of anterior dorsal vertebres of Fythen retroduces

ac articular surface for centrum c centrum; hyp., hypepophysis;
ns neural spine pre prezygapophysis pts., postsygapophysis
rib facets for rib; is p., transverse process sq., syganirum
ts sygosphene

species, many of which are known only from a few specimens. is superfluous. For that reason I have not adopted all the names proposed by Wall. Some, owing to changes in nomenclature, are now inappropriate. The use of the name Coluber, for instance, when the genus which he calls Coluber is now known as Elaphe, would only cause confusion. In adopting the name Racers for the genera Coluber and Elaphe, I have taken one that has long been used in America for the same group.

The nomenclature of the head shields and the method of counting the dorsal scales are shown on the accompanying

tigures.

Unless otherwise stated in this volume, the upper head shields are understood to be normal, viz., to consist of a rostral, a pair of internasals, a pair of prefrontals, a frontal, a pair of supraoculars and a pair of parietals; on each side one or two nasals, a loreal, one or more pre- and postoculars, temporals and several labials.

The measurements given for the species are of the largest that I have examined, or of which there is an authentic record.

BIBLIOGRAPHY.

ABERCEOMBY, A. F.

1922. The senses of a snake. J. Bombay Nat. Hist. Soc. xxviii, p. 812.

BEDDARD, F. E.

1907. The position of the umbilicus in certain vipers. Proc. Zool. Soc. London, pp. 50-52.

BLUM, H. F., and SPEALMAN, C. R.

1933. Note on the killing of rattlesnakes by "sunlight." Copeia,
Ann Arbor, no. 2, p. 151.

BOULENGER, E. G.

1915. On a colubrine snako (Xenodon) with a movable maxillary bone. Proc. Zool. Soc. London, pp. 83-85.

BOULENGER, G. A.

1896. Remarks on the dentition of snakes and on the evolution of the poison fangs. *Proc. Zool. Soc. London*, pp. 614-616.

1917. Sur l'évolution de l'appareil à venin des serpents. C. R. Acad. Sci. Paris, olxy, pp. 92-94.

Brongersma, L. D.

1938. On the presence or absence of hypapophyses under the posterior precaudal vertebrae in ome snakes. Zool. Meded, Leiden, xx, pp. 240-242.

Owners F N 1935 A handled of Waleys an burds. Bull Royal Mass no 11

COPE E D 1893 Producein of a new system of the non venomous analys Amer Vat 1833 pp 477-483

DAVIS, D 1930 Counchy and making behaviour in makes Look Ser Field Mus hat But tr. pp 257 "30 text figs

DON'S P R.

1929 A tenta ive key and arrangement of the American genera of Colubr in Bull Antona Incl. Amer. pp. 18-94 FLEAT D

1937 Black Stakes in rombat Proc R Zuel Sec N S Wales Aug pp 40-19 ple

FRANCIA A G

1928 The engkes of Declais J Bomboy Sat Hast For XXXIX PD 78-50

HAAR G

1931 | Ther die Marpholome der Karfemuskulatur und die Schleiel machenik einiger Schlangen Zool Jahrb Jena Iv pp 333tia sers figs

1935 A note on the o ign of Selenoglyph anaken. Copers Ann Arter Do 73 78 test-fire

HAINER T P

1940 Delayed fortilizat on in Lentolere annulate polyel de Copera, dun Arber no 2 per 116-118

HOLTENGER TETEVER, H

1935 The Strukturhider des hatternheindes bei Schlangen. Ein Riffanntel zur Systemat k Verh Druged Zoof Ges Lapre xxxvn ph \$1.90

KELLAWAY C H

1933 Some Peculiarities of Australian snake venoma Trans Rog Soc Trop Med 2xv pp 3-24

1937 The results of excus on of the venom glands of the Australian Tight Sasks (Askelits scattle) Austral J exp Biol xs pp 11 130 figs

Koratery P 1938 Fin Beitrag zur Eierkunde und zur Portpflanzung der Mulai nehrn Raptiner Bull Raffies Mas no 14, pr 81 167

MCCARY C

1935 Male Rat stakes (Zements mucceus) fight ng J Bombey Not H & See THINLD 409

MORATER, W

1935 The myology of the trusk region of stakes Pub Un v Cal forn a. pp 81 120 test has

Mosauer, W., and Lazier, E. L.

1933. Death from insolation in desort snakes. Copeia, Ann Arbor, no. 2, p. 149.

NAKAMURA, K.

1935. On a now integumental poison gland found in the nuchal region of a snake, Natrix tigrina lateralis. Mem. Coll. Sci. Kyoto Imp. Univ. B., x, pp. 229-240, text-figs. & pls.

NEHER, E. M.

1935. The origin of the "Brille" in Crotalus confluentus lutosus (Great Basin Rattlosnake). Trans. Amer. Ophthal. Soc. xxxiii, pp. 535—545.

Noble, G. K.

1937. The sense organs involved in the courtship of Storeria-Thamnophis and other snakes. Bull. Amer. Mus. Nat. Hist., New York, lxxiii, pp. 673-725.

PICADO, T.

1931. Epidormal micro-ornaments of the Crotaline. Bull. Antiven. Inst. Amer., Philad. iv, p. 104.

POCKRANDT, D.

1937. Beiträgo zur Histologie der Schlangenhaut, Zool. Jahrb. Jena (Anat.), lxii, pp. 275-322.

PRATER, S. H.

1933. "Non-Poisonous Snakos." J. Bombay Nat. Hist. Soc. xxxvi, pp. 391-394.

1933. The social life of snakes. J. Bombay Nat. Hist. Soc. xxxvi, pp. 469-476, pls.

RAHN, H.

1940. Sperm viability in the uterus of the Garter-snake, Thamnophis. Copeia, Ann Arber, no. 2, pp. 109-115.

SARKAR, S. C.

1923. A comparative study of the buccal glands and teeth of the Opisthoglypha and a discussion on the evolution of the order from the Aglypha. Proc. Zool. Soc. London, pp. 295– 322, text-figs. and bibliography.

SCHWARZ-KARSTEN, H.

1933. Über Entwicklung und Bau der Brille bei Ophidiern und Lacertiliern. Gegenbaurs Morphol. Jahrb. lxxii, pp. 499-538.

SMITH, M. A.

1938. The mucho-dorsal glands of snakes. Proc. Zool. Soc. London, pp. 575-583, text-figs. & pls.

1939. Evolutionary changes in the middle car of certain Agamid and Ignanid lizards. Proc. Zool. Soc. London, pp. 544-549.

1941. The herpetology of the Andaman and Nicobar Islands. Pr. Linn. Soc. 2, pp. 150-158, maps.

SWIFT, L. W.

1933. Death of a rattlesnake from continued exposure to direct sunlight. Copeia, Ann Arbor, no. 2, p. 150.

TAIR, J

1938 Surgical removal of the poison glands of the Rattlewnske Copeus, Ann Artor, no I, pp 10-13

TRAPROG. H

1940 Mating time and sperm viability in Storersq Copeia, Ann Arbor, no 2, pp 107-109

VERRIER, M L

1936 Les paupières des reptiles et leur agnification. Bull fice Zool Fr 12, pp 443-446

WALL F 1925 The passarons terrestrial saskes of our British Indian Do-

minions (including Ceylon), and how to recognize them, With symptoms of make possensing and treatment Bombay, 171 pp , text fige

WALLS, G L. The occurrence of coloured lenses in the eyes of snakes and aquirrels, and their probable eignificance Copera, Ann

Arbor, pp 125-127 1934 The aignificance of the Reptilian " spectacle" Amer J.

Ophthal xvit, Pp 1043-1047

WEEKER H C

1935 A review of placeatation among reptiles with particular regard to the function and evolution of the placenta. Proc Zool Sec London, pp 625-845

WILDE, W S

1938 The role of Jacobson's organ in the feeding reaction of the Common Garler make (Thampophie engles) J Esper. Lool larvis pp 445-463

Order SQUAMATA.

Suborder SERPENTES.

Scrpentes Linnaeus, 1758, Syst. Nat. 10th ed. i, p. 214; Pope, Snakes Alive, 1937 (habits).

Ophidia Macartney, 1802, in Ross. Transl. Cuvier's Lect. Comp. Anat. i, tab. iii; Boulenger, F. B. I. 1890, p. 232, and Cat. Sn. Brit. Mus. i, 1893, p. 1; Gadow, Amphib. and Rept. 1909, p. 581; Nopsca, Palmobiologica, i, 1928, p. 178; Romer, Vertebrate Paleontology, 1933, p. 439; Hoffstetter, Arch. Mus. Hist. Nat. Lyon, xv, 1939, p. 3.

Key to the Families.

 Palato-maxillary arch* incomplete, no ectopterygoid; no supratemporal; prefrontal forming a suture with the nasal; coronoid present; vestiges of pelvis.

Maxilla transversely placed, loosely attached, toothed; mandible edentulous

Maxilla bordering the mouth, toothless; mandible toothod

II. Palato-maxillary arch complete*; both jaws toothed.

A. Coronoid present; prefrontal bone in contact with the nasal.

 Vestiges of hind-limbs; supratemporal present.

Bonos of the skull united to one another; supratemporal intercalated in the cranial wall

Supratemporal attached scale-like to the cranium, entirely susponding the quadrate; facial bones movable

2. No vestiges of limbs; no supratemporal; tail very short, blunt, the scales covering it more or less modified

B. No coronoid bono.

 No poisen fangs in the front of the jaw.

Bones of the skull solidly united; premaxillary teeth; prefrontal bone in contact with the nasal

No premaxillary teeth; prefrontal not in contact with the nasal; facial bones movable

Typhlopidæ, p. 41.

Leptotyphiopidæ, p. 59.

Anlilden, p. 94.

Boldæ, p. 102.

Uropelildæ, p. 61.

Xenopeltiam, p. 98.

Colubridæ, p. 114.

^{*} The palato-maxillary arch is composed of four bones, namely the palatine, pterygoid, maxilla, and ectopterygoid.

Maxillary hope electulous except for a few minute teeth, hypepophyses of the anterior vertebras pierring the meso

nhaous 2 Posson fangs in the front of the mouth the most anterior maxil lary tooth canaliculate or tubu

Maxillary bone burnsontal, with teeth behind the poson fangs, tail exhidrical, no

b real shield Maxillary bone horizontal, with teeth behind the posen langs, tall vertically com

pressed paddis-shaped Maxillary hone very short vertically erectile.

no toeth on it except the poison fences

Dasypeltidas, p 403

Elapidm, p 406

Hedrophiidm, p 439 Vineridm, p 477

As an alternative Key based upon characters that are easily determined and mostly external, the following is proposed, except for some members of the Colubrate, it will be found to work very well

I Even vestigial covered over by shields body worm like, covered with urn form scales, tail very short Teeth only as the upper jaw , 16 to 36 scales

round the body Teeth only in the lower jaw , 14 scales round

the body II Lyes exposed; teeth in both laws. nodes row of ventral scales more or

less distinctly enlarged usually form ing transverse shields A Vestiges of hard limbs, terminating in a claw like spur, usually dis tunmushable on each aide of the

vent, ventral scales transversely enlarged, not extending completely across the belly Ventrals scarcely broader than the adjacent scales 19 to 23 scales round the body

Ventrals narrow, but quits distinct, more than 40 scales round the body B No vestiges of limbs

1 No posson fangs in the front of the

Premaxillary tooth, an avygous pempetal shaeld, in contact with the frontal, ventrals well developed, not extending completely across the belly tentrals scarcely broader than the adjacent

scales, tail extensely short, ending ob tuncly and covered with modified scalor ventrals nearly or quite as broad as the body, tail cylindrical, pointed, no premaul lary teeth

Maxiliary bons edentulous except for a few minute teeth , scales in 15 rows , pupil vertical

Troblookle

Leptolyphiopidm

Apition

Bolda

Xenopeltidæ

Uropeltidas Calubridae

Darveettidas

2. Poison fangs in the front of the mouth, the most anterior maxillary tooth canaliculate or tubular.

Maxillary bone with teeth behind the fangs; tail cylindrical; no loreal; pupil round;

Iaxillary bone very short, bearing fangs only; pupil vertical; vontrals nearly or quito as broad as the body Elapidæ.

Hydrophlidæ.

Viperidæ.

Family TYPHLOPIDÆ.

Typhlopsidæ Gray, 1845, Cat. Liz. Brit. Mus. p. 130 (in part). Typhlopidæ, Boulenger, F. B. I. 1890, p. 234, and Cat. Sn. Brit. Mus. i, 1893, p. 3; Worner, Arch. Naturg. Berlin, lxxxvii, 1921, p. 266; Essex. P. Z. S. 1928, p. 879; Haas, Zool. Jahrb. lii, 1930, p. 1, and Zeit. Zell. mik. Anat. Berlin, xvi, 1932, p. 745; Mookerjee & Das, Nature, exxx, 1932, p. 629.

Palato-maxillary arch incomplete, no ectopterygoid; maxilla more or less transverse, loosely attached to the skull, the teeth

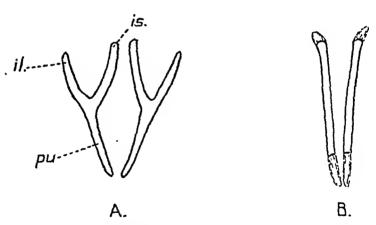
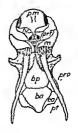


Fig. 12.—Pelvic girdles of Typhlops. A. T. braminus. B. T. acutus (after Essex, P. Z. S. 1927, figs. 83 & 75).

il., ileum; is., ischium; pu., pubis.

directed backwards; prefrontal forming a suture with the nasal; no supratemporal; mandible with coronoid bone, toothless; quadrate elongate, directed horizontally forwards. Pelvis reduced to a single bone or absent. Body cylindrical, of equal diameter throughout, covered with uniform scales; eyes more or less distinct, under the shields.





В

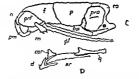


Fig. 13.—Skoll of Typhlops shared. Drawn from a specimen stated with alicarm and a sheel shell. (BM Collection.) x about 20 A Dorsel, B Ventral, C Laboral views. The mandables have been removed. D The outer view of left mandable.

Three genera are recognized, Typhlops containing by far

the largest number of species.

Range. South Europe; South Asia; Africa; Australia; Tropical America.

Genus TYPHLOPS.

WORM-SNAKES: BLIND SNAKES.

Typhlops Oppel, 1811, Ordn. Rept. p. 54 (type lumbricalis); Boulenger, F. B. I. 1890, p. 235, and Cat. Sn. Brit. Mus. i, 1893, p. 7; Werner, Arch. Naturg, Berlin, lxxxvii, 1921, p. 271; Wall, Sn. Ceylon, 1921, p. 5; Mahendra, Proc. Ind. Acad. Sci. iii, 1936, p. 128. Typhlina Wagler, 1830, Syst. Amphib. p. 196 (type lineata).

Pilidion Dum. & Bibr., 1844, Erp. Gen. vi, p. 257 (subst. name for Typhlina, same type).

Typhlinalis Gray, 1845, Cat. Liz. Brit. Mus. p. 134 (subst. name for Typhlina, same type).

Argyrophis Gray, l. c. s. p. 136 (type bicolor). Diaphorotyphlops Jan, 1861, Arch. Zool. Anat. Fisiol. i, (2) p. 185 (type disparalis).

Gerrhopilus Fitzinger, 1843, Syst. Rept. p. 24 (type ater). Aspidorhynchus Fitzinger, I. c. s. p. 24 (type cschrichtii).

Gryptotyphlops Peters, 1881, Sitz. Ges. Nat. Fr. p. 70 (type acutus).

Head not distinct from neck, with large rostral, nasal, ocular and preocular shields; nasal shield more or less completely divided into an anterior and lower, and a posterior and upper portion, the cleft passing through the nostril; the lower eleft is always present, the upper may or may not be; mouth small, inferior; tail extremely short. Four supralabials is constant for all the species.

The hemipenis of Typhlops diardi, the only species I have been able to examine, is short and fat, with convoluted plice;

there are no spines.

Range: As in the Family. Werner in his revision of the

genus lists 164 species.

Small, degenerate, worm-like snakes, most of them only a few inches in length, living underground, or in decaying wood or vegetation. In soft earth they can burrow rapidly, but the highly polished character of the scales, all of which are very strongly imbricate, and the absence of ventral shields makes progression above ground often difficult. Use, however, is made of the terminal spine of the tail with which most of the species are provided. This, being stuck into the ground and thus fixing the body, is used as a lever for moving the body backwards or forwards. According to Annandale the hook on the snout of acutus is used for the same purpose. Their food consists of worms, soft-bodied insects and their larvæ.

It is usually stated that the Typhlopidæ are oviparous,

but Well has remarked (1918) "I am not aware of any authenticated instance of the example of them having been deposited Certainty not all the species are outparous Very large specimen of 7 durits (BM 1837 0 8 1) obtained by me near Saigon contains 14 embry os all perfectly developed. The usual number of eggs for young produced at a time is from 3 to 8

Aothing is known shout the tate of growth of the young and observations on this boint would be valuable bull length appears to be reached fairly rapidly, for it is common to find two inther hade of the same species of equal length but one of them only half as thick as the other A more puzzling problem is to account for two individuals one of which is distinctly longer but yet more alen ler than the other A count of the number of transverse scale rows is then valuable for within limits this appears to be fairly constant for the species

Mooreries & Day (1932) and Mahendra (1936) have pointed out that the parietal bone of Typhlops braminus is paired, materi of the two halves being united as in usual in smakes This is true of many of the dimmutive (or most degenerate) forms of Typhlops and of the larger ones in early life The character can be seen quite easily after simple dissection with a good fens but it does not after our conception of the Ophilian skull Degeneration of structure, is in certain ways only failure of development and Typhlops, in respect of its parietal bones may be regarded as remaining undeveloped throughout life

Hasa (102) has given an account of the peculiar gland like structures in the epidrums of the head of Typhleps bramsnus. He regards them as being of the type of the sebecous glands and suggests some theories with regard to their function A faller investigation of these remarkable atructures would well repay the work.

They are not confined to T brominus and can be seen with a good lens, without dissection, in most of the Indian species, showing through the scales as light lines of transversely arranged markings following the contours of the scales but within their overlapping edges (fig 14) In T beddomes the whole of the head anterior to the eyears atod led with them They are least distinct in those species with a large rostral they are cease distinct in those species with a range toest-should. I dom'th has a pair of comprisions glandular patches immediately beneath the mostrus, they can be readily examined by removing the scales that cover them and the laminated arrangement of the glandular structures is then well seen (fig 15) This condition presumably foreshadows the external pet or depression, which is to be found in T both

Key to the Species

Key to the Species.	
I. Snout rounded; nostrils lateral.	
A. No subocular, the ocular in contact with the 3rd and 4th labials. a. Nasals not in contact with one another	
behind the restral.	
18 scales round the body.	
Breadth of rostral \(\frac{1}{2} \) that of the head; diameter of body 50-60 times in the total length Breadth of rostral \(\frac{1}{2} \) that of the head; diameter of body 85 times in the total length	porrectus, p. 46.
	J. v. 40.
20 scales round the body. Breadth of restral \(\frac{1}{2}\) to \(\frac{1}{2}\) that of the head; masal suture usually passing to precedur; diameter of body 30-45 times in total length; 290-320 transverse scale-rows	brominus n 18
As in braminus, but diameter of body 55-75 times	braminus, p. 46.
in total length; 370-400 transverse scale-rows. Breadth of restral 1 to 1 that of the head; nasal	psammeces, p. 48.
suture to 2nd labial; head and neck white Rostral at least half as broad as the head; eye not	albiceps, p. 48.
distinct	thurstoni, p 49.
22 scales round the body.	
ireadth of restral 1 to 1 that of the head; masal completely divided	jerdoni, p. 50.
Breadth of rostral \(\) that of the head; nasal completely divided	leucomelas, p. 50.
divided	tennicollis, p. 50.
24 or 26 scales round the body (rarely 22 in diardi).	•
Breadth of tostral } or more, that of head; black	
above, whitish below	diardi, p. 51.
tudinal black lines	oatesi, p. 53. bothriorhynchus, [p. 53.
18 scales round the body; preocular in contact with the anterior masal	tindalli, p. 53.
18 scales round the body; preocular separated from	
the anterior nasal 16 scales round the bedy B. 1 or 2 suboculars; 18 scales round the body.	beddomei, p. 54. oligolepis, p. 55.
One subocular, separating the ocular and preocular from the labials; restral separating the masals.	mirus, p. 55.
One subcoular, soparating the ocular and procedur from the labinle; massle in contact with one another behind the restrai	centonievo n 55
another behind the restral	ceylonicus, p. 55. {p. 56. andamanensis
from the labials II. Snout pointed, with sharp horizontal edge and inferior nestrils; 28-36 scales round	
the horier	actitus to EB

the body acutus, p. 56.

1 Typhiops porrectus

Typhiga corrector Scalestia 1271 J A S Bengal at p 438 pc 250 pc 250 and 64 Sen St 1 Mas 1835 p 15; Blanford Ind Yark. Mass Rept 1378 p 21 Wall J Bombay N H S xx 1371 p 278 fig head and b 1 xx 1573 p 24.

ng (Musorie 6000 ft W H malayas London) and ibid, xxix,

1923 p 348

Typhlops coming Wall, 1913 J Rombay N H S xx p 515, fig (Pyawber Upper Burms Lendon) and sb 1 xxix, 1993

Snout rounded strongly projecting nostrals lateral. Breadth of rostral | to | that of the head not extending quite to the level of the exca masal meompletely divided the suture passing from the 2nd labest to the special or just beyond ocular and procular shorter than the posterior nasal eye fairly distinct in the ocular or at its junction with the suprescular low-redge of oc lar wedged in between the 3rd and 4th labrals, prefrontal in contact with the rostral tail ending in a fine point 18 scales round the body the diameter of which is contained 50-60 times in the total length 400-440 rows of transverse scales

Blackish or brown above paler below snout chin and

anal region usually whitish Total length 285 mm.

Range India (Karachi N W F P the Himalayes Punjah United Prov Bibar and Orissa Bengal Bombay Dist Bangalore Travancore) Ceylon (Punduloya) Upper Burma (Pyawbwe)

2 Typhlops flower!

Typhlops flowers Bouleager 1899 in Flower P Z S p 854 pl xxxvil, hg 2 (Sum London) Cochren, Proc U.S hat Mus Ixxvii, 1930 p 21

Differs from porrectus as follows -- Nasal completely divided rostral a little broader ? the width of the head tail not ending in a some Diameter of the body 85 times in the total length

Black, paler below snout and anal reg on yellowish

Total length 210 mm

The exact locality of the type is not known Cochran records a second specimen obtained in Bangkok

3 Typhiops braminus

COMMON BLIND STARR BRARBINY BLIND STARR

Russell 1198 Ind Serp a p 48 pl xhm (Vzzapapatem) Erge bran nas Daudin, 1863, Rhis Nat Rept vil, p 219 (based on Russell)—Typhiops bransmus Cuvier Reg Anum, 2nd ed.

 1829, p. 73; Boulenger, F. B. I. 1890, p. 236, fig. head, and Cat. Sn. Brit. Mus. i, 1893, p. 16; Laidlaw, Fauna Mald. Lacc. J. Bombay N. H. S. xviii, 1907, p. 104, and ibid. xix, 1903, p. 609, and xxv, 1918, p. 377, col. pl., and ibid. xix, 1923, p. 609, and xxv, 1918, p. 377, col. pl., and ibid. xxix, 1923, p. 349, and Sn. Ceylon, 1921, p. 9, fig. head; Pope, Rept. China, 1935, p. 71; Bourret, Serp. Indo-Chine, 1936, p. 10, fig. head; Fraser, J. Bombay N. H. S. xxix, 1937, p. 464. J. Bombay N. H. S. xxxix, 1937, p. 464; Prater, ibid. xxx, 1924, p. 165.

Tortrix russeli Merrem, 1820, Syst. Amph. p. 84 (based en Russell).— Typhlops russelli, Schlegel, Abbild. Amphib. 1839, p. 39 (Bengal

Ophthalmidium tenue Hallowell, 1860, Proc. Acad. Philad. p. 497

(Hongkeng; ? type lost).

Typhlops limbricki Annandale, 1906, Mem. A.S. Bengal, i, p. 193 (Ramnad, S. India; Calcutta); Wall, J. Bembay N. H. S. xxix, 1923, p. 349.

Typhlops braminus var. pallidus Wall, 1909, J. Bombay N. H. S.

xix, p. 609 (Dibrugarh, Upper Assam).

Typhlops fletcheri Wall, 1919, ibid. xxvi, p. 556 (Nilgiris), and Spol.

Żeyl, xii, 1922, p. 253.

Typhlops braminus var. arenicola Annandale, 1906, Mem. Asiet. Soe, Bengal, i, p. 192 (Ramnad, S. India; London and Calcutta).

Snout rounded, strongly projecting; nostrils lateral. Upper portion of rostral 1 to 1 the breadth of the head, not extending to the level of the eyes; nasal shield completely

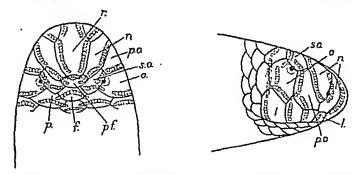


Fig. 14.-Head of Typhlops braminus. The disposition of the gland is also shown.

f., frontal; l., labial; n., nasal; o., ocular; p., parietal; pf., prefrontal; po., preocular; r., rostral; so., supraocular.

divided, the lower suture usually passing to the preocular, that shield being in contact with the anterior nasal; ocular and preocular subequal in breadth, both a little shorter than the posterior nasal; eye distinct, in the ocular shield or at its junction with the supraocular; lower edge of ocular shield wedged in between 3rd and 4th labials; prefrontal in contact with the rostral; tail ending in a fine point; 20 seales round the body, the diameter of which is 30-45 times in the total length; 290-320 transverse rows of scales.

Brown or blackish above, lighter below, amout anal region and end of tail usually whitish

Total length 170 mm Range The whole of India Caylon and Indo China Haman southern China the Malay Peninsula and East Indian Is Persia and Arabia Africa (Zanzibar Cape Colony) the Andamans and Ascobars and Islands of the Indian Ocean Mexico

The common Typhlons of the Oriental Region

Larration Occasionally the nasal suture instead of passing backwards to the preocular passes downwards to the 2nd labial This has happened in the types of arenicola diversiceps limbricks and fotchers. In 12 specimens from the Tinnevelly Hills (B M 84 5 8 17 26) it occurs in 5 while in the other I the usual condition obtains

Annandale a arenicola based on three specimens are pale buff in colour almost pigmentless in life. They were found in sandy desert country and it would be interesting to know if their environment is responsible for their lack of colour

4 Typhlops psammetes

Typhlope tenute Ganther 1864 Rept Bnt Ind. p 176 pl 274. fig C (Madres London)

Typhlops paramaces Gunther Le . p 444 (aubat name for tenus

Typhlops pasmoophelus Annandale 1908 Mem Asiat Son Bengal L. p 193 (flatmad S Ind a London and Calcutta) Like bramisus but of more alender proportions Frontal

the breadth of the head masal auture to the preocular diameter of the body 55-75 times in the total length , 370-400 transverse tows of scales

Total length 140 mm

Whether I am correct in reviving Gunther a passimeces as distinct from draminus remains to be seen. The greater slenderness of the body and the increased number of traus verse scale ross distinguish it from the typical form but more material may show that it is only a variant. The exact locality of Guather's apecimen is not known—the word Madras covered a large area in his days but the locality of Annan daje a psammophilus which I regard as conspecific with promineces is quite clear, it is certainly very different from his areascole which came from the same district

5 Typhlops albiceps

Typhlops of seeps Boulenger 1828 Ann Mag Nat Hist (7) I p 124 (Chantabun, S.P. Sasm London) and Fauna Melay Pen.

1912, p 103 Flower P Z S 1899 p 854 pl zrzvu, fig 1 Typhlops sudmiet Rendahl 1937 K Sven Vet Akad Stockholm, trix A, 10 p 11 (Dawna Hills Burna Stockholm not seen

Snout rounded, strongly projecting; nostrils lateral. Rostral \(\frac{1}{3} \) to \(\frac{2}{5} \) the width of the head, extending to the level of the eyes; nasal incompletely divided, the upper cleft not reaching the rostral, the lower passing to the 1st or 2nd labial; preocular as long as the ocular or the posterior nasal; eye small, just distinguishable; lower edge of ocular shield wedged in between the 3rd and 4th upper labials; head shields larger than the scales on the body; prefrontal in contact with the rostral. Tail ending in a fine point; 20 scales round the body (not 18 as given by Boulenger), the diameter of which is contained about 60 times in the total length.

Light brown, paler below; head, neck, tail and anal region

white.

Total length: 180 mm.

Range. Siam (Bangkok, Chantabun, San Kampeng Mts.); the Larut Hills, Perak, in the Malay Peninsula; Burma

(Dawna Hills).

To this species I also refer a specimen in the Paris Museum collected by Monsieur Colani in French Indo-China, exact locality not known. In morphological characters it agrees entirely with albiceps, but it is considerably larger, being 255 mm. in total length, diameter 5 mm. Most of the head is white, but not the neck. The eyes are not visible, but this may be due to the fact that the creature is about to slough, its general colour being grey.

6. Typhlops thurstoni.

Typhlops thurstoni Boettger, 1890, Ber. Senck. Ges. Frankfurt, p. 297 (Nilgiris; Frankfurt; not seen by me); Sarasin, Zool. Jahrb. Jena, 1910, p. 137; Wall, J. Bombay N. H. S. xxvi, 1919, p. 556.

Typhlops walli Procter, 1924, Ann. Mag. Nat. Hist. (9) xiii, p. 139,

fig. head (Wynaad, S. Indis; London).

Snout broadly rounded, strongly projecting; nostrils lateral. Rostral broad above, ½ to ½ as broad as the head, extending to the level of the ocular shields; nasal incompletely divided, the suture passing from the 2nd labial to just beyond the nostril; ocular and preocular shorter than the nasal; eye not distinguishable; ocular shield touching 3rd and 4th labials, not wedged in between them; prefrontal half as broad as the head, in broad contact with the rostral; supraocular twice as broad as long; tail ending in a point; 20 scales round the body, the diameter of which is 50–80 times in the total length; 550–600 transverse rows of scales.

Light brownish or yellowish above, paler below; snout

and anal region whitish.

Total length: 300 mm.

Range. S. India (Nilgiris; Trichur, Cochin State).

Known from 4 specimens.

VOL. III. E

7 Typhlops jerdoni

Typhlors proton Houleager 1890 F B I p 238 and Cat Sn Brut
Mus 1, 1893 p 19 pl. 1, fig 5 (Khasi Hills London) Wall,
J Bombay N H. S mx, 1809 p 238, and xxvi, 1819 p 865

and SIR, 1923 p 349
Typhlops of retroeps Annandale, 1912, Ree Ind. Mrs. vin p 44.
pl v fig 1 (Painghas, Abor Country Calcutta)

Shout rounded strongly projecting nostrile lateral Rectard parton its breath it to it that of the best extending to the level of the eye; nasal completely divided the lower elect passing to the 2rd labal order and precoults longer than the posterior nasal eye very distinct in the occlayer than the posterior nasal eye very distinct in the occlayer lower redge of occlete sheld wedged in between 3rd and 4th labals suprascular larger than the prefrontal which is noticed with or just be paradel from the rootsal tail ending in a pictle 22 scales round the body the diameter of which is conjusted 3rd-5t times in the total levels 290–280 transverse

rows of scales

Dark brown or blackish above light brown below smoot

and anal region whitish Total length 230 mm.

Runge Sastern Himalayas (Sikkim Darpreling Duars dists)
Assam (Abor and Khasi Hills) Upper Burma (Lashio)
Wall (1919) records a specimen from Pegu

8 Typhlops leneamelas

Typhicys fewconsists Boulenger 1896 F B I p 237 (Haycock Mt., near Galle Corlon London) and Cat Sa. Brit Mns i 1897 pt Spi ing 4 Wall Sn Coylon, 1971 p 12 fig. and Spoi Zepl zii, 19 2, p 233 and 3 Bombey N H S xxix, 1923 p 250

Differs from gerdom as follows —Breadth of rostral above that of the head diameter of the body 32 times in the total length

Black above whitch below the two colours meeting in a clear line of demarcation. Total length 120 mm

The type is from near Galle There is a second specimen in the Colombo Museum without precise locality

9 Typhiops tennicollis

Ongolocopialus (Ophikalmohem) ienuscilis Peters, 1884, Mon. Akad. Berlin, p 212 pl. — fig 2 (Himalayus; Berlin not not by mon. 2 prihops feuscolis Beologney F B I, 1890, p 41 and Cat En. Hint, Man. I, 1893 p 37; Wall, J Bombey

Typhlops theobaltumus Stolierka, 1811 J A. S Bengal, zl. p. 429 pl. zzv. fige 6-8 flyps les unknown Calcutta) Boulenger F B I 1809 p 240 and Cat Sa It Res. , 1893 p 26 Wall, J Bombay N H. S xxiz, 1973 p 250

51

Snout broadly rounded, strongly projecting; nostrils lateral. Rostral half as broad as the head, extending to the level of the ocular shields; nasal incompletely divided, no upper suture, the lower passing to the 1st labial; ocular shorter than the preocular, posterior nasal longer than both; eye not or just distinguishable; lower edge of ocular shield wedged in between 3rd and 4th labials; supraocular twice as broad as long; prefrontal in contact with the rostral; tail ending in a point; 22 scales round the body, the diameter of which is contained 65-70 times in the total length; 480-520 transverse rows of scales.

The type of theobaldianus is now considerably broken up and discoloured, but the characters necessary for identifica-

tion arc fortunately intact.

Boulenger (F. B. I. p. 236) has placed tenuicollis in a section by itself, the nostrils said to be inferior. Peter's figure, on the other hand, shows the nostrils lateral, and in all other respects the description agrees so completely with theobaldianus that I have no hesitation in uniting them. A third specimen has since been obtained by Capt. Butler at Samagutin, Naga Hills, Assam.

10. Typhlops diardi.

DIARD'S BLIND SNAKE.

Typhlops diardi Schlegel, 1839, Abbild. Amphib. p. 39 (Indes Orientales; Paris); Dum. & Bibr., 1844, Erp. Gén. vi, p. 300; Jan, Icon. Ophid. p. 19, liv. 3, pls. iv, v, fig. 10; Boulenger, F. B. I. 1890, p. 238, and Cat. Sn. Brit. Mus. i, 1893, p. 22; Annandale, Rec. Ind. Mus. viii, 1912, p. 44; Wall & Evans, J. Bombay N. H. S. xiii, 1901, p. 620; Wall, ibid. xxv, 1918, p. 381, col. pl., and xxix. 1923, p. 351, and xxx, 1925, p. 805, and xxxi 1926, p. 558; Venning, ibid. xx, 1911, p. 770.—
Typhlops diardi diardi, Smith, J. N. H. S. Siam, vi, 1923, p. 52, and Rec. Ind. Mus, xlii, 1940, p. 479.

and Rec. Ind. Mus, xlii, 1940, p. 479.

Typhlops mulleri Schlegel, 1839, Abbild. Amphib. p. 39, pl. xxxii, figs. 25-28 (Padang, Sumatra; Leiden).—Typhlops diardi malleri, Brongorsma, Zool. Meded, Leiden, xvii, 1934, p. 193.

Typhlops nigroalbus Dum. & Bibr. 1844, Erp. Gen. vi, p. 295

Typhlops nigroalbus Durn. & Bibr. 1844, Erp. Gen. vi, p. 295 (Sumatra; Paris).—Typhlops diardinigroalbus, Smith, J. N. H. S. Siam, vi, 1923, p. 52.

Typhlops schneideri Jan, 1864, Icon. Gen. Ophid. i, liv. 9, pl. i,

Typhlops schneider Jan, 1864, Icon. Gen. Ophid. i, liv. 9, pl. i, p. 20, fig. 3 (Bangkok; Milan).

Argyrophis horsfieldi Gray, 1845, Cat. Liz. Brit. Mus. p. 137 (Khasi Hills; London).

Argyrophis bicolor Gray, I. c. s. p. 136 (Singapore; London).

Typhlops striolatus Peters, 1861, Mon. Akad. Berlin, p. 922
(Calcutta; London and Berlin).

Typhlops siamensis Günther, 1864, Rept. Brit. Ind. p. 175, pl. xvi, fig. D (Siam; London).

Typhlops barmanus Stoliczka, 1872, Proc. A. S. Bengal, p. 144
(near Moulmein Burma: Calcutta)

(near Moulmein, Burma; Calcutta).

Typhlops tephrosoma Wall, 1908, J. Bombay N. H. S. xviii, p. 314

(Khasi Hills; London), and ibid. xxx, 1925, p. 805.

Typhlops cinereus Wall, 1909, J. Bombay N. H. S. xix, p. 609 (Upper Assam).

E 2

Shout rounded strongly projecting mostrils lateral Upper portion of rostral i to i the breadth of the first extending to the level of the eyes or not guide so far, massle incompletely disided the lower delt passing to the 2nd labral . ocular and procular shorter than the posterior pass, eye datanet usually in the ocular shield the lower edge of which is wedged in between 3rd and 4th labular prefrontal in contact with the rostral Tail ending in a small spine the meter of the body contained 26-32 times in the total length 460-300 transverse rows of scales (for specimens of diards diardi)

Total length 430 mm The soung in the specimen referred to on p 44 measure about 100 mm in length, diameter

25 mm



Fig 15 -- Snout of Typhiops durals seen from below. The imbracete portion of the scale covering the ref has been cut away

The type of deards was said by Schlegel to have come from Cochin China but Dument and Bibron writing of the specia men later state that its exact locality of origin is not known.
All the specimens that I have seen from Oochim China agree with the Malajan form and must therefore be labelled muellers.

The distribution of the two forms will now stand as follows -

Typhlops diards dierds

24 to 26 rarely 28 scales round the body Brown to blackish above paker below, the two colours not atrongly contrasted

Range Bengal Assam Burma and French Indo-China north of lat 16°

Typhlops diards muellers

24 to 26 rarely 22, scales round the body Blackish olive to brown above pellound white below, the two colours with a clear line of demarcation

Range Burma Stam and Prench Indo China south of lat 14°, the Malay Penmauls and Archipe'ago

I have not yet seen any examples from between lats 14° and 16°

11. Typhlops oatesi.

Typhlops oates Boulenger, 1890, F. B. I. p. 238, and Cat. Sn. Brit. Mus. i, 1893, p. 23 (Table I, Coros Group, Andamans: London); Wall, J. Bombay N. H. S. xxix, 1923, p. 350.

Snout rounded, strongly projecting; nostrils lateral. Rostral narrow, its breadth \(\frac{1}{2} \) that of the head, reaching to between the eyes; nasal nearly completely divided; the lower cleft passing to the 2nd labial; ocular and preocular longer than the posterior nasal; the lower edge of the ocular wedged in between 3rd and 4th labials; eye very distinct, in the ocular shield; prefrontal in contact with the rostral; tail ending in a small spine: 24 scales round the body, the diameter of which is contained 32 times in the total length.

Yellowish-brown, with confluent dark spots in the centres of the scales, forming longitudinal lines down the body;

on the middle of the belly they are absent.

Total length: 200 mm,

Range. Known only from the three type-specimens.

12. Typhlops bothriorhynchus.

Typhlops bothriorhynchus Günther, 1864, Rept. Brit. Ind. p. 174, pl. xvi, fig. G ("Penang": London): Stoliczka, J. A. S. Bengal, xl, 1871, p. 424: Boulenger, F. B. I. 1890, p. 239, and Cat. Sn. Brit. Mus. i, 1893, p. 23; Wall, J. Bombay N. H. S. xxix, 1923, p. 350.

Snout rounded, strongly projecting; nostrils lateral. Rostral narrow, its upper portion about \(\frac{1}{2} \) the width of the head, extending to the level of the eyes; nasal nearly completely divided, the lower cleft passing to the 2nd labial; ocular, procedur, and posterior nasal subequal in length eye very distinct, in the ocular shield, the lower edge of which is wedged in between 3rd and 4th labials; prefrontal in contact with the rostral. A distinct but shallow depression on each side of the snout, below the nostril, the nasal cleft passing through it: tail ending in a small spine: 24 scales round the body, the diameter of which is contained 30 times in the total length; 300-330 transverse rows of scales.

Brown above, paler below.

Total length 180 mm.

Range. Assam. The specimen recorded by Stoliczka from Hardwar, U. Provinces, cannot now be found.

13. Typhiops tindalli *, sp. nov.

Typhlops thurstoni (not of Boettger) Boulenger, 1893, Cat. Sn. Brit. Mus. i. p. 26; Procter, Ann. Mag. Nat. Hist. (9) xiii. 1924, p. 139, fig. head.

Typhlops beddomei (not of Boulenger). Wall, 1919, J. Bombay N. H. S. xxvi, p. 556.

^{*} Named after Mr. Roger Tindall.

Snout rounded, strongly projecting; nostrils lateral Rostral broad, I the width of the head, acareely reaching half way to the level of the centar shields. usual moompletely divided, the lower suture passing to the preocular, that shield being in good contact with the anterior nasal; posterior nasal very large, in good contact with its fellow behind the rostral, no visible eye, ocular shield much smaller than the preocular, touching the 3rd and 4th labials, not wedged in between them; supraocular twice as broad as long, prefrontal and frontal larger than the scales on the body Tail rounded, no trace of a spine, 18 scales round the body, the diameter of which is contained 50 times in the total length, about 300 transverse rows of scales

Uniform isabelline yellow Total length 175 mm.

The types, 3 in number, are from Nilambur, Malabar district. To this species I also refer the specimen, now apparently lost, identified as boddomes by Wall from Pilloor in the Nilguri Hills (1919)

Boulenger's description in the Catalogue is an abbreviated translation of Boettger's, but the two specimens listed by him as from Nilambur, and labelled thursions on the bottle, are something entirely different, and represent an undescribed and very distinct species

14 Typhlops beddomel

Typhlops beddomer Boulenger, 1890, F B I p 237, and Cas An But Mas i, 1883 p 18, pl : hg 3 (Hills of S India; London)

Snout rounded, strongly projecting, nostrils lateral Breadth of rostral I that of the head, not reaching to the level of the eyes, mani completely divided, the lower cleft passing to the 2nd labral, posterior nasal very large, much larger than the ocular or preocular, in contact with its fellow behind the rostral, eye famly distinct, lower edge of ocular shield usually not wedged in between the 3rd and 5th labials, supraocular twive as broad as long, tall ending in a point, 18 scales round the body, the diameter of which is 20 to 30

times in the total length, 190-200 transverse rows of scales Brown above, pale below, snout and anal region whitish,

a more or less distinct dark vertebral line often present. Total length · 110 mm (140 mm Wall)

Range Hills of Southern India, between 2,000-5,000 feet (Travancore, Anaimalas Hills, Cochin State, Tinnevelly) There are in the British Museum 4 specimens said to be from the Kimrdy Hills, Vizagaparam district, collected by Col

As already stated (p 44), in this species the glandular

structures are more richly developed than in any other Indian species, the whole of the head in front of the eyes being studded with them.

15. Typhlops oligolepis.

Typhlops oligolepis Wall, 1909, J. Bombay N.H.S. xix, p. 339, fig. (Nagri Valley, Darjeeling dist., 5000 feet; London), and xxix, 1923, p. 347.

Closely allied to beddomei, differing as follows:—Rostral smaller, the portion visible above only extending to about half-way between the tip of the snout and the level of the eyes; eyes less distinct: tail without point; 16 scales round the body, the diameter of which is contained 50 to 60 times in the total length.

Brown above, paler below.

Total length: 145 mm.

Range. The Eastern Himalayas, 5,000 feet (Sikkim, Nagri Valley; Darjeeling district).

Three specimens are known.

16. Typhlops mirus.

Typhlops mirus Jan, 1860, Icon. Gen. Liv. i, pls. iv.-v. fig. 7 (Ceylon; Leyden); Günther, Rept. Brit. Ind. 1864, p. 176, pl. xvi, fig. H; Boulenger, F. B. I. 1890, p. 240, and Cat. Sn. Brit. Mus. i, 1893, p. 52; Wall, Sn. Ceylon, 1921, p. 7, fig. head, and J. Bombay N. H. S. xxix, 1923, p. 348.

Snout rounded, strongly projecting; nostrils lateral. Rostral broad, about ½ as broad as the head, nearly reaching to the level of the eyes; nasal completely divided, the lower suture passing to the 2nd labial; ocular and preocular small, much shorter than the posterior nasal, the latter separated from the labials by a subocular which is wedged in between them above and is in contact with the 2nd, 3rd, and 4th labials below; eye scarcely distinct, the ocular shield in contact with the 4th labial only; prefrontal in contact with the rostral. Tail bluntly pointed, without spine; 18 scales round the body, the diameter of which is contained 40-50 times in the total length; 330-360 transverse rows of scales.

Brown above, paler below; snout and anal region whitish.

Total length: 140 mm.

Range. Ceylon, in the hills. Known definitely from Peradeniya.

17. Typhlops ceylonicus, sp. nov.

Snout rounded, strongly projecting; nostrils lateral; rostral nearly half the width of the head; nasal completely divided, the lower suture passing to the second labial, the posterior shield very large, in good contact with its fellow

behind the rostral ocular and preceular small, the latter separated from the jabials by a subocular, which is wedged in between them above and is in contact with the 2nd, 3rd, and 4th labials below no visible eve the ocular shield in contact with the 4th Isbial only tail blunt, without terminal spine 18 scales round the body, the diameter of which is 35 times in the total length about 330 transverse rows of scales

Brown above yellowish-white below

Total length 140 mm

Known from a single specimen obtained at Peradeniva, Ceylon

Type in the Indian Museum Closely related to T mirus, from which it differs in having the masals in contact with one another behind the rostral and in its atouter proportions

18 Typhlops and amanensis

Typhiops and amaneura Stoliczka, [87] J A S Bongal al. p 458 pl xxv figs 9-12 (Andaman Is Cakutta) Boulenger I B I 1890 p 241 and Car Sn Bris Mus : 1893 p 55, Wall, J Bombay h H S xx12, 1923 p 343

Snout rounded strongly projecting nostrals lateral. Breadth of rostral | that of the head, extending to the level of the eyes nasal completely divided, the lower suture passing to the 2nd labral ocular and preocular shorter than the posterior nasal both shields separated from the labials by two smaller shields the one below the ocular touching the 3rd and 4th labials, not wedged in between them , eye industriet , prefrontal in contact with the rostral tail obtuse ending in a spine 18 scales round the body, the diameter of which is contained 17-20 times in the total length

Brownish-black above sides vinaceous paler below, where it is chequered with white mouth and tail below white Total length 160 mm

This description is drawn up from Stoliczka's text and drawing. The only specimen which he had is unfortunately

19 Typhiops acutus

THE BEARED BUSD STAKE.

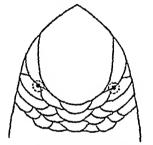
Ospidacaphalus acutus Dana & Bibr 1844 Exp Cén. vi. p. 313 (179) for Constanting Faraji-Typhings acutus Boulenger F B L 1860 (1802 p. 26, Annandas J A. S Bergellands Eng. Br. Huw (1802 p. 26, N. R. S. vvi. 1903 p. 182, and 2 vv. 1816 p. 377, col. pl. and 2 vv. 1816 p. 377, col. pl. and 2 vv. 1816 p. 377, col. pl. and ARIX, 1975 P 251
Onychocrphalus conferences Lathro, 1862 \ i.d. Medd., Kjoben

Organization of the State of th

Snout pointed and hooked, projecting strongly, with sharp horizontal edge; nostrils inferior. Rostral very large, covering most of the head above, extending posteriorly to well behind the level of the eyes; nostril close to the rostral, the suture passing from it to the 2nd labial, the anterior nasal being extremely small; a long, narrow preceular: a subceular in contact with the 3rd and 4th labials; ocular largely in contact with the nasal, the eye mostly in the latter shield; prefrontal in contact with the rostral, both it and the supraccular being three to four times broader than long. Tail ending in a small spine; 28–34 scales round the body, the diameter of which is contained 40–60 times in the total length; 450–500 transverse rows of scales.

Brown above, paler below. In many individuals each scale of the back and sides has a pale yellow centre.

Total length 600 mm.



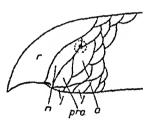
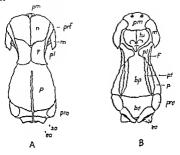


Fig. 16.—Dorsal and lateral view of head of Typhlops acutus. l., labial; n., nasal; o., ocular; pro., preceular; r., rostral.

Range. India, south of the Ganges Basin and south of Rajputana, west to Baroda and east to Calcutta. Rare south of lat. 16°. The largest of all the Oriental species of Typhlops.



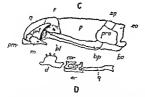


Fig. 17—Skull of Leptotyphlops distorts. Drawn from a specimen staned with absent. (B.N. Coll. 29.5 29 17-20.) x about 15. A. Dorsal, B. Ventral C. Lateral year. The madubles have been removed D. Outer was of left mandable.

or, articular, so beaucoupted by, besimphenoid cor, coronnoi, d, decidary or exceepted f, frontal or manilla n meal, p persolal pf palatane pm, perchantle prf prefrontal, pro, proote pf persygoid q, quadrate so, supresoccipital, in hirhynal

Family LEPTOTYPHLOPIDÆ.

Leptotyphlopidæ Stejneger, 1891, Proc. U.S. Nat. Mus. xiv, p. 501. Glauconiidae Boulenger, 1890, F.B. I. p. 242, and Cat. Sn. Brit. Mus. i, 1893, p. 57.

Palato-maxillary arch incomplete, no ectopterygoid; maxilla bordering the mouth, in suture with the prefrontal and premaxilla, toothless; prefrontal forming a suture with the nasal; no supratemporal; mandible with coronoid bone, toothed; quadrate elongate, directed horizontally forwards. Pelvis present, consisting of ilium, ischium, and pubis; a vestigial femur usually present. Body cylindrical, of equal

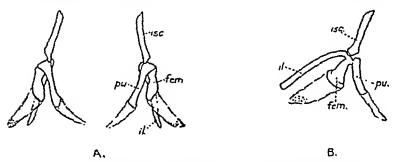


Fig. 18.—A. Ventral view of pelvic girdle of Leptotyphlops distanti.

Drawn from a specimen stained with alizarin. B. Lateral view of right half of girdle.

fem., femur; il., ilium; isc., ischium; pu., pubis. The cartilaginous continuations of the pubis and femur are shown.

diameter throughout, covered with uniform cycloid scales; eyes under the shields.

Range. Africa, S.W. Asia, Southern U.S.A., Tropical America.

Small degenerate burrowing snakes bearing a close superficial resemblance to the Typhlopidæ. The Indian species can be distinguished externally from Typhlops in having the nasal and ocular shields bordering the lip, an enlarged pre-anal plate, and in having only 14 scales round the body.

As in the Typhlopidæ incomplete ossification of the bones of the cranium may occur. In the specimen of Leptotyphlops nigricans (=distanti), figured by Brock (1932), the parietals are fused into a single bone: in the specimen here figured (Brit. Mus. Coll.), a fully grown individual, they are incompletely separated; the foramen magnum, which is very large,

is formed entirely by the exocupital. In a specimen of L macrorhynchus (Brit Mus Coll) stained with alizarin

the whole of the top of the brain case appears unossified In the Leptotyphiopide the pelvic girdle and hind limbs show less reduction than in any recent snakes The vestigial femur in some species is covered with a horny spur and projects through a small slit in the skin on each side of the vent

Genus LEPTOTYPHLOPS

Leptotyphlous Fitzinger 1643 Syst Rept p 24 (type migricans); Brock Anai Ani Jena Irani 9/10 1932 p 177 Glauconia Gray 1843 Cat Liz Brit Mas p 133 (type migricans); Bouloman D P 1 1869

Boulenger F B 1 1890 p 243 and Cat Sn Brit Mus 1, 1893

p 59 Essex P Z 8 1927 p 829 Werner Mitt Zool, Mus Hamburg xxiv 1917 p 191 Haas Zool Jb Jena Anat liti, Rostral nasal and ocular shields very large all three bordering the lip other head shields more or less distinctly

enlarged preanal enlarged 14 scales round the body W Asia Africa America Two species in the Indian region

Ley to Species

Snout booker, its lower a inface (in front of the mouth) con ave d'ameter of body 80-110 times in the

Snout min led diameter of body 55-20 times in the macrothynchus In 61. blanfords

20 Leptotyphlops macrorhynchus

Stenostoma mucrorhynchum Jan, 1802 Arch Zool. Anat Fis, iftenomes materrafuectains Jan. 1802. Arch 2001. Anna. con-Centou i p plus (Sennar Egypt eurlan Milao) and Icon Gen. Liv i 1860 p 39 pl v fig 12 and pl vif fig 12—Glousomes moreorly cluste. Bo timger. Ann. Mag. bat Hut (6) vi. 1890, p 82 and Cal Sn Bril Mus : 1893 p 81, Wall J Bombay h H S xv : 1898 p 798 and xxxx 1923 p 352

Snout promment hooked as lower surface (in front of the mouth) concave rostral half as broad as the head extending to the level of the eyes nasal completely divided its inferior portion bordering the lip ocular bordering the lip between two labals eye conspicuous in the ocular, other head shields more or less distinctly enlarged, 14 scales round the body, the diameter of which is 80-110 times in the total length Very light brown or fawn in colour

Total length 280 tail 20 mm (specimen from Jask Persia).

Range Sind (Karachi) Baluchistan (Quetta) Persia, Arabia Whether the snake from India Persia and Arabia is con specific with the true macrorhynchus from Africa, cannot be

decided without more material for comparison

21. Leptotyphiops blanfordi.

Glauconia blanfordii Boulenger, 1890, F.B.I. p. 243 (Sind: London), and Cat. Sn. Brit. Mus. i, 1893, p. 66; Alcock & Finn, J.A.S. Bengal, lxv. 1896, p. 561; Wall, J. Bombay N. H. S. xx. 1911, p. 1033, and xxix. 1923, p. 351.

Glauconia carltoni Barbour, 1908, Bull. Mus. C. Z. Harvard, li, p. 316 (Amballa, Punjab; Harvard); Barbour & Loveridge.

ibid, lxix, 1929, p. 269.

Like macrorhynchus in scale characters but the snout rounded, not concave inferiorly, and the body of slightly stouter proportions, 55-80 times in the total length.

Total length: 240, tail 20 mm. (Sind).

Range. Sind (Kotri, Hyderabad) · Punjab (Amballa, Multan); N.W.F.P. (Jamrud Terah); Baluehistan (Sibi, fide Wall). Alcock & Finn record blanfordi from Koli-i-Malik Siah in the extreme north-west corner of Baluehistan, but the specimens are not now available for examination. They were said to be pink in life and very active.

Family UROPELTIDÆ.

UROPELTS; ROUGH-TAILS.

Uropeltacea J. Müller. 1832, Zeitschr. Physiol. iv, p. 270; Peters, Serp. Fam. Uropelt. 1861, p. 1; Hoffstetter, Bull. Mus. Hist. Nat. Paris, (2) 1939, p. 426.

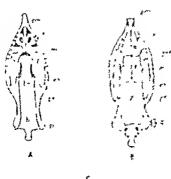
Rhinophes Fitzinger, 1843, Syst. Rept. p. 24.

Uropellidæ Gray, 1845, Cat. Liz. Brit. Mus. p. 140; Boulenger, F. B. I. 1890, p. 251, and Cat. Sn. Brit. Mus. i, 1893, p. 137; Proctor, Ann. Mag. Nat. Hist. (9) xiii, 1924, p. 142; Baumeister, Zool. Jahrb. Anat. 1908, p. 423, pl., and 1910, p. 659; Haas, Zool. Jahrb. Jena, lii, 1930, p. 132; Radovanovic, Jena Zeitschr. Natury, lxxi, 1937, p. 203.

Bones of the skull solidly united; maxilla with from 6 to 8 teeth, the palatine with 3 or 4 minute teeth in Platuplectrurus and Melanophidium, absent in the other genera; prefrontal in contact with the nasal; quadrate very short, vertically placed; no supratemporal; no postorbital; mandible with coronoid bone, bearing 8 to 10 teeth.

Head not distinct from neek; eye with round pupil; body cylindrical, rigid, tail very short. Four supralabials are constant throughout the family, and there is no loreal.

In the Uropelts the cranial bones are more solidly united than in any other family of snakes, a consequence brought about no doubt by their fossorial habits. Without solid union of the bones no forcible burrowing would be possible. The occipital bones are firmly connected to one another. and to the prootic and the basisphenoid, so that in the fully grown individual the sutures cannot be distinguished. In the





Tel 11-2-and temple proble & basin's 3 linear of formal ten 1 Machine in which 65 merchants for about 65 merchants for hammonical for anomaly of message of the hamplements for particular for particular formal between the problem for particular formal formal personal of pulsars for performance for methods for problem for particular for methods for metho

same way the premaxilla is united to the maxilla. The occipital condyle projects markedly beyond the back of the skull. Its structure and articulation with the atlas and axis have been described by Hoffstetter (1939).

The hemipenis is very small owing to the extreme shortness of the tail, and it is difficult to examine satisfactorily. Two entirely different types of hemipenis, at least, can be distinguished. In Melanophidium punctatum it is comparatively short and thick, and is furnished with a series of long convoluted folds through which the sulcus spermaticus winds (when seen in the organ at rest); there are no spines. In Uropeltis grandis the organ is longer and more slender and is finely spinose throughout. The sulcus is not bifurcated.

The members of this family are confined to the Peninsula of India and Ceylon; in India their centre is in the Western Ghats and the extreme south; one species only, namely Uropellis ellioli, extends its range into the east. The majority of the species are extremely local in their distribution. All are

of small size, few of them exceeding a foot in length,

To Col. Beddome, more than any other naturalist, we owe our knowledge of this family, and the magnificent collection made by him is now in the British Museum. The secretive habits of these snakes often makes it difficult to obtain them without careful searching, and it is probable, in districts that have not been investigated, that new forms will yet be found.

They inhabit the mountainous districts, often at very high altitudes, and the forested areas at the foot of the mountains, living under logs or stones or buried in the earth. After heavy

rain they are often seen on the roads or in gardens.

In soft earth they can burrow quickly and easily, digging their way into the soil with the snout. This habit has led to marked development of the muscles of the trunk, particularly the anterior ones, and in many species the thickness of the fore part of the body is greater than that of the head. In addition there is a lateral bend in the neck, so that the long axis of the head is not in a line with that of the body

(fig. 23).

The purpose of the peculiar tail of *Rhinophis* and some species of *Uropeltis* has not yet been satisfactorily explained. McCann (1924) states that *U. macrolepis* uses it as a stopper to plug up the entrance to the hole where he is buried. Nicholls (1929) says that "the purpose of this shield is to allow the snake to obtain a purchase as it pushes its way through the soil." On the other hand, Wall writing of *U. ceylonicus*, which has quite as efficient a "stopper" as macrolepis, says that "nothing in its behaviour suggested any use for the tail."

He remarks also upon the frequency with which the end of the

tail in freshly caught specimens is coated with mud

The evolution of the head and tail have not followed one another pars passy that is to say, the species which show the greatest specialization of the tail do not always show the greatest change of the head shields In Platyplectrurus, the least specialized genus the normal head shields are present adaptation to a fessonal life has led to reduction in the size of the eye, the formation of an orniar shield, and to the develop ment of a large and beak like rostral shield. This development culmmates in such forms as Uropelite macrorhynchus and Rhinophia ozyrhunchus

The so called ocular shield as formed by the union of the supra and postoculars and subsequent growth of the two shields so that the eye has completely within the margin of the shield In no species is there any recess between the eyeball and the orbit, sa in most anakes, the transparent

window ' of the eye being united with the surrounding structures

The evolution of the tail in the genus Uropelius has proceeded along two lines. In one there is flattening of its upper ex tremity, with modification of the scales covering that part, a type which leads to the obliquely truncate and highly specialized disc of the macrolepis brougham group (Sect II) In the other (Sect III, maculate grandse) the tail is cylindrical or compressed, the caudal scales are not modified, and the terminal scute ends in a transverse ridge with two points placed side by side In melanogaster and phillips, however. the scute has become convey, it is higher than long and the terminal points have almost disappeared, thus foreshadowing the caudal shield of Rhmophie

In disposition the Uropelts are quiet and moffensive They do not bute when handled, however much they are irri tated, nor do they appear to have any fear When picked up they do not try to escape, but will twine themselves round the fingers or a stick, and remaining in that position can be estried long distances. They have been known to eat immediately after being caught. They are easily kept in captivity, feeding chiefly upon worms and the soft bodied larvas of insects

As far as is known all the species are viviparous, producing from 3 to 8 young at a time

Some of the species are brilliantly coloured with red, orange, or yellow . a blue or green colour is unknown amongst them . the black forms are remarkable for their indescence It is unfortunate that Gray's name Silyburg, which has been

so long in use cannot stand, but Fitzinger's action, in fixing the type of Uropellis two years earlier is quite clear

Key to the Genera.

I. A mental groove	Melanophidium, [p. 65.
A. Eye distinct from the surrounding shields. Torminal caudal scute depressed, with lateral ridges	[p. 67.
B. Eye not distinct from the surrounding shields. Terminal caudal scute simple, without ridges, compressed Terminal caudal scute ending in two superposed points, which may be simple or compound. Tail usually obliquely truncate, the truncated	TERETRUEUS, p. 69. PLECTRURUS, p. 71.
portion covered with thickened differentiated scales; terminal caudal scute ending in a transverse ridge or two points side by side Tail ending in a convex or flattened, rounded, rugose shield End of tail with a large, subcircular, flat, spinose shield above	Uropeltis, p. 73. Rhinophis, p. 87. [p. 93. Pseudotyphlops,

Genus MELANOPHIDIUM.

Melanophidium Günther, 1864, Rept. Brit. Ind. p. 193 (type wynaudense): Beddome, Ann. Mag. Nat. Hist. (5) xvii, 1886, p. 29; Boulenger, F. B. I. 1890, p. 272, and Cat. Sn. Brit. Mus. i. 1893, p. 163.

A mental groove. Eye in the ocular shield; no supraocular or temporal shield. Tail feebly compressed; caudal

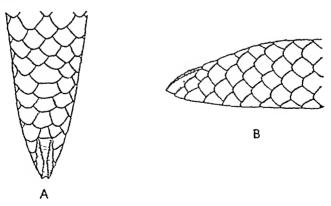


Fig. 20.—Tail of Melanophidium punctatum.

A. Dorsal, B. Lateral view.

scales smooth; terminal scute with lateral or superior ridges which converge to the tip. Scales in 15 rows.

Key to the Species

I Suture between the ocular and frontal less than one third the length of the latter

than one third the length of the latter shield. Ventrals and outer 3-3 scale rows white with a black centre

Belly entirely black with a broad white stripe on each side II. Suture between the ocular and frontal more

II. Suture between the ocular and frontal more than one-third the length of the latter shield

Black, with or without large yellow spots below . , symoudeuse, p 67

punciatum, p. 66.

bileneatum, p 66

22 Melanophidium punctatum.

Mannephotous punchouse Baddons 1871, Madras Monthly J Mid Kei P 401 (Trarssons, Landen), Comthan, P. Z. & 1878 p 230 pl xxxis, 6g B; Baddons, Ann. Mag Nat, Hist. (1) xvii, 1845, p. 11. Boddeney, P B L 1800, p. 121, and Cat. Sa. Dini Han I, 1813 p 164, Perguson, J Bornbay M LS xxi, 1814 p. 1815, p. 1845, p. 1

abore equal to or less than half the distance between it and the fronts! fronts variable is sue, longer than bread, the length of the suture between it and the supersocular 3 or 4 times in the length of the fronts!, ere one-third the length of the ocular shell. It is a supersocular a contract that the adjacent scales to 18-18. Tall compressed; caudal scales smooth, terminal sente mostly on the upper surface of the tall, with parallel radges above forming two (sometimes four) points at the parallel radges above forming two (sometimes four) points at the radge. In the young the scrute is sumply pointed and without radges.

scale rows white with black centres
Total length 560, diameter 14 mm

Range S India Travancore Hills, 4,000-5,000 feet; Anaumala: Hills, Telewady. Goa Frontier

23 Melanophidium bilineatum.

Similar to the preceding, but the eye smaller, its diameter

The Wynasd, referred to so often by Beddome and writers of his date, but not found on recent attace as a highland area in the Malabar Datract, between Cours and the Milera Halls

one-fourth the length of the ocular shield, and the ventrals a little broader, twice as broad as the adjacent scales. V. 188-200; C. 15-17. Tail as in the young of punctatum.

Iridescent black above and below; the two colours separated by a broad, yellow stripe along scale-row 2 and the adjacent halves of rows 1 and 3; it may or may not have a series of small black dots.

Range. Known from three specimens which are apparently not yet fully grown. They were collected on Peria and Tirrhioot Peaks, west of Manantoddy.

24. Melanophidium wynaudense.

Plectrurus wynaudensis Beddome, 1863, P. Z. S. p. 228 (nr. Manantoddy: London).—Melanophidium wynaudense, Günther, Rept. Brit. Ind. 1864, p. 194, pl. xvii, fig. 3; Beddome, Ann. Mag. Nat. Hist. (5) xvii, 1886, p. 30; Boulenger, F. B. I. 1890, p. 272, and Cat. Sn. Brit. Mus. i, 1893, p. 163; Wall, J. Bombay N. H. S. xxvi, 1919, p. 560, and xxix, 1923, p. 360.

Similar to punctatum, but the suture between the ocular and the frontal more than one-third the length of the latter shield. Eye usually a little smaller. V. 170-185; C. 10-18. Terminal caudal scute with two superposed lateral ridges which meet on a transverse ridge at the tip.

Iridescent black all over, or with large white or yellow

spots on the belly.

Total length; 440, diameter 10 mm.

Range. S. India. Manantoddy dist.; Coorg, 3,000-5,000 feet.

Genus PLATYPLECTRURUS.

Platyplectrurus Günther, 1868. Ann. Mag. Nat. Hist. (4) i, p. 414 (type trilineatus); Boulenger, F. B. I. 1890, p. 273, and Cat. Sn. Brit. Mus. i, 1896, p. 165; Procter, Ann. Mag. Nat. Hist. (9), xiii, 1924, p. 141.

Wallia Werner, 1925, Sitz .Ber. Akad. Wiss. Wien, exxxiv, p. 53 (type inexpectata=madurensis); Smith, Ann. Mag. Nat. Hist.

(10) i, 1928, p. 496.

No mental groove. Eye distinct from the surrounding shields; a supraocular, a postocular, and a temporal shield. Tail compressed, the scales smooth or nearly so; terminal scute depressed, with lateral ridges which meet in a point. Scales in 15 rows.

Key to the Species.

Supraocular longer than the prefrontals; dorsum with three black longitudinal lines trilineatus, p. 68. Supraocular not longer than the prefrontals; uniform purplish brown above..... madurensis, p. 69.

25 Platyplectrurus trilineatus

Plotterma 1 tril mente Buddomen, 1857 Madras Quart J Med, Sellat, pl 16 fig (Anazallay) Lendona and 2 Se B blog Nat Helst. London 1860 ; p 315 fig (repuss)—Plabyplotrems trilineate Ginther Ann Max Nat Bins (4), 1889 p 413 Beddome D.d. (6) zwil 1836 p 12 Bedlenger P H I. 1860 p 27 Martin 1860 p

Plotyplatrume bilinesius Boildome 1885 Ann Mag Nat Hist (5) Xvi p 33 (Madras Hills London)

Snout obtuse rostral small the portion visible above equal to half the distance between it and the frontal frontal longer than broad usually abover than the parietals supra-

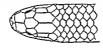




Fig. 21 —Plotyplectures madureness

oculari longer than the perionals' ventrals one and a half times as broad as the adjacent scales V 163-175 C 8-16 Tail more of less compressed the scales smooth or nearly so terminal onte depressed, flat beneath with a lateral ridge on each after two meeting na point a less distinct median one of the control of the control of the control of the one of the control of the control of the control of the one of the control of the control of the control of the control of the one of the control of the c

When young light brown with three broad dark brown stripes above a stripes above a stripes above a stripe at the stripes above a stripe at the stripes above and the stripes above a stripe at the stripes above and a stripe of the stripes at the stripe of the stripe at the stripes at the stripe at the stripes at the strip

rarely the vertebral one is absent; lower parts light brown, the edge of each scale being whitish.

Total length 390, diameter 11 mm.

Range, S. India: Anaimalai Hills: Travancore.

26. Platyplectrurus madurensis.

Platyplectrurus madurensis Beddome, 1877, P. Z. S. p. 167 (Palni Hills; London), and Ann. Mag. Nat. Hist. (5) xvii, 1886, p. 33; Boulenger, F. B. I. 1890, p. 274, and Cat. Sn. Brit. Mus. i, 1893, p. 166; Ferguson, J. Bombay N. H. S. xiv, p. 386; Wall, ibid. xxix, 1923, pp. 360 and 396. Wallia inexpectata 1925, Werner, Sitz. Akad. Wiss. Wien, oxxxiv,

p. 53 (type loc. unknown; Vienna); Smith, Ann. Mag. Nat. Hist.

(10) i, 1928, p. 496.

Similar to trilineatus, but the frontal shorter, always shorter than the parietals, and the supraoculars not longer than the prefrontals.

Nacreous purplish-brown above, ventrals and the two adjoining rows of scales white in the centre, purplish-brown at the edges, V. 158-175; C. 10-15.

Total length: 440, diameter 13 mm.

Range. S. India. Palni and Travancore Hills, 4,000-6,000 ft.

Genus TERETRURUS.

Teretrurus Beddome, 1886, Ann. Mag. Nat. Hist. xvii, p. 28 (type sanguineus).

Brachyophidium Wall, 1921, J. Bombay N. H. S. xxviii, p. 41, pl. (type rhodogaster); Procter, Ann. Mag. Nat. Hist. (9) xiii, 1924, p. 141; Wall, ibid. (9) xiv, 1924, p. 200.

Platyplectrurus (in part) Boulenger, F. B. I. p. 273, and Cat.

No mental groove. Eye distinct or not from the surrounding shields; a supraocular present or absent; a temporal shield. Tail more or less compressed; caudal scales smooth or feebly multicarinate; terminal scute simple, compressed and pointed. Scales in 15 rows.

Both Procter and Wall in their discussion of Brachyophidium appear to have overlooked the fact that the character of the

terminal scute had been already recognized by Beddome.

Key to the Species.

A supraocular and a temporal shield sanguineus, p. 69. No supraocular shield rhodogaster, p. 70.

27. Teretrurus sanguineus.

Plectrurus sanguineus Beddome, 1867, Madras Quart. J. Med. Sc. p. 14, fig. (Anamallays; London), and J. Soc. Bibliog. Nat. Hist. London. 1940, i, p. 315, fig. (reprint).—Teretrurus sanguineus

Beddome Ann. Mag hat Het (5 xvi) 1886 p 28.—Platy plecturus aempuneus Boolenger F B 1 1800 p 274, and Cat Sn. Bert Mrs 1, 1837 p 165, Ferguson, J Bombay N H S r 1895 p, 71; Wall ibid, xxix, 1923 p 560

Platyplochurus heustone Beddonne 1878 1 Z S p 701 (Wynned);

London

Plearurus scabracauda, Theobald, 1878 Cat Rept Brit Ind. p 136 (Anamaliaya type lost) Teretrurus frommericus Berldome 1898 Ann. Mag Nat Hiel

(5) xvii, p 29 (Travantore; London)

Shout obtasely rounded, portion of the routral visible from above not longer than the distance between it and the pre frontal frontal much longer than broad as long as the part etals a supraocular, a postocular, and a temporal aheld eye more than half the length of the ocular shield \ 120-150. nearly twice as broad as the adjacent scales, C 5-9 Tail compressed, candal scales smooth or feebly by or tricarinate m the female all the candals and last sentrals more or less distinctly multicarinate in the males . terminal acute simple, compressed smooth or with minute tubereles ending in a ample point

Total length 230 diameter 9 mm

Brown or purplish red above, belly red, uniform or spotted or blotched with black

Range S India Wynasd , Ansimala: Hills Travancore, 3 000-7 400 feet

28 Teretrurus rhodogaster.

Brachyopladium skodopasar Wall, 1921 J Bombay N H S xxviii. p 4: [Paings Hills London] and xxvn 192° p 556 and xxix, 1923, pp 359 2 293 and Ann. Mag hat Hat (9) xv 1924, p 200; Proctor flid (2) xin 1924, p 140

Snout subscummate, portion of the rostral visible from above less than the distance between it and the prefrontals, which are much longer than the ussals, frontal much longer than broad, longer than the parietals, supraocular and postocular united into a single shield, a temporal shield, eye half the length of the ocular shield V 139-145, twice as broad as the adjacent scales C 7-10 Tail compressed . upper candal scales smooth or feehly be or tricarmate; terminal scute simple, compressed ending in a point

Blackish brown above ventrals and outer row of scales

whitish (red to life)

Total length 210 diameter 7 mm Range & India Palni Hells

Genus PLECTRURUS.

Pleatrurus Dumeril, 1851, Cat. Coll. Rept. p. 224; Dum. & Bibr., Erp. Gén. vii, 1854, p. 166 (type perroteti).

Maudia Gray, 1858, P. Z. S. p. 261 (no type given).

Plecturina Gray, I. c. s. p. 265.

Pseudoplectrurus Boulenger, 1890, F. B. I. p. 270 (type canaricus).

No mental groove. Eye not distinct from the surrounding shields; a supraocular present or absent; no temporal shield. Tail compressed; caudal scales keeled; terminal scute compressed, with two superposed, simple bifid or trifid points. Scales in 15 rows.

Key to the Species.

A separate supraocular shield.

A. Terminal soute ending in two simple

points B. Terminal scute ending in two bi- or tricuspid transverse ridges.

Reddish-purple above, uniform

Golden above, with black spots or narrow cross-

bars....

II. Supraocular shield united with the ocular. canaricus, p. 72.

perroteti, p. 71.

guentheri, p. 72.

aurcus, p. 72.

29. Plectrurus perroteti.

Plectrurus perroteti Dum. & Bibr., 1854, Erp. Gén. p. 167, pl. lix, fig. 4 (Nilgiris; Paris); Günther, Rept. Brit. Ind. 1864, p. 193; Beddome, Ann. Mag. Nat. Hist. (5) xvii, 1886, p. 25; Boulenger, F. B. I. 1890, p. 271, and Cat. Sn. Brit. Mus. i, 1893, p. 161; Wall, J. Bombay N. H. S. xxvi, 1919, p. 558, and xxix, 1923, p. 359; Roux, Rev. Suisse Zool. xxxv, 1928, p. 442. Plectrurus davidsoni Beddome, 1886, Ann. Mag. Nat. Hist. (5) xvii, p. 25 (Anamalleys; London); Boulenger, F. B. I. 1890, p. 271, and Cat. Sn. Brit. Mus. i, 1893, p. 162.

Snout obtusely pointed; portion of rostral visible from above shorter than the distance between it and the frontal: frontal much longer than broad, as long as the parietals; supraocular small, twice as long as broad; eye half, or a little less than half, the length of the ocular shield. V. 152-180, one and a half times as broad as the adjacent scales; C. 6-12. Tail compressed, the scales multicarinate: terminal scute compressed, tuberculate and ending in two simple superposed points.

Brown or dark purplish-brown, paler below than above, uniform or each scale with a reddish or yellowish centre;

young usually with a yellow line on the tail above. Total length: 440, diameter 11 mm.

Range. S. India. Nilgiris, Anaimalai Hills. Common in the Nilgiris between 4,500 and 6,000 feet. Viviparous, producing from 3-6 young at a time. They are born in July and August.

30 Plectrurus guentheri

Pietrorus quentieri Beddome 1863, P.Z.S. p. 228, pl. xxvii (Walaghat W. Nujura Londomi; Beddome, Ann. Has Nat Hat (6) xvii, 1895 p. 26, Boulenger, F.B.I. 1890, p. 271, and Cat. Sc. Brit. Mus.; 1893. p. 162; Wall, J. Bombey N H S XXIX, 1923 p 359

Head shields as in perrolets, eye half the length of the ocular shield V 171-175 one and a third to one and a half times as broad as the adjacent scales , C 10-12 Tail as in perroleis, but the terminal acute with two superposed his or tricuspid transverse ridges

Bright reddish purple above, this colour descending as triangular markings on the sides, which, like the belly, are yellow the triangular markings may extend across the belly

Total length 375, diameter 9 mm

Range 5 India Sispera Chat on the Western side of the Nilgin Hills

31 Pleetrurus aureus

Pictrurus cureus Baldome, 1859, P 2 8 p 182 (Chambra Rill ; Londom) and Ann. Mag Nat Hist (3) xvii, 1858, p 22. Boulenger F B f 1859 p 272 sed Cat Sn. Brit Mus i, 1893, p 162 Wall, J Bombay N H 8 xxix, 1823, p 360.

Lake quenthers in morphological characters but the colour pattern quite different V 164-177, C 8-12

Golden above, lighter below, the dorsal scales, except the outer one or two rows, edged with violet. The back is



Fig 22 -Side view of tail of Plectrums surrus

marked with narrow, megular violet-black cross bars, which may be reduced to a few seattered spots, belly much ornamented by violet black cross-bars or alternating spots Total length 400, diameter 9 mm

Ronge Chambra Hill, Malabar

32 Pleetrurus canaricus

Silybura conorum Beddome, 1870 Madras Month, J Med. Sci. December 19 December 1910 Hadrins Month, 2 Eru. Cross-Francisco Marks at Magaglare, London J. Picture, Paterrows, 1920 St. 1887, p. 229, Beddoms, Ann. Mag. Nat Hat (5) Str. 186, p. 227, Beddoms, Ann. Mag. Boulenger P B I. 1890, p. 227, Beddoms, December 1920, p. 1891, p.

Snout obtusely pointed; portion of rostral visible from above shorter than the distance between it and the frontal; frontal much longer than broad, as long as or longer than the parietals; no supraocular, the eye completely surrounded by the ocular shield, one-third its length. V. 172-188, not twice as broad as the adjacent scales; C. 6-13. Tail compressed, the scales smooth or feebly multicarinate; terminal scute ending in two, single or bifid, superposed points.

Brownish-violet, each scale usually paler in the centre; with or without small yellow spots on the back; lips yellow. Some yellow blotches on each side of the anterior part of the body: lower surface of tail yellow, with or without a black median streak; a light vertebral line on the tail often present.

Total length: 430, diameter 10 mm.

Range. S. India. S. Canara, Mysore, 6,000 feet.

Genus UROPELTIS.

Uropellis (in part) Cuvier, 1829, Règne Anim. 2nd ed. ii, p. 76; Fitzinger, Syst. Rept. 1843, p. 24 (type ccylanicus).

Siluboura Gray, 1845, Cat. Liz. Brit. Mus. p. 142 (type ellioti).—

Silybura, Boulenger, F. B. I. 1890, p. 257, and Cat. Sn. Brit.

Mus. i, 1893, p. 144. Coloburus Dumeril, 1851, Cat. Coll. Rept. p. 224 (type ccylanicus). Crealia Gray, 1858, P. Z. S. p. 264 (type melanogaster).

Eye in the ocular shield; no supraocular, no temporal; Tail cylindrical or obliquely truncate, the no mental groove. terminal scute ending in two points side by side or simply a transverse ridge.

Key to the Species.

I. Tail obliquely truncate above, the truncated portion small, feebly convex, never quite flat, the scales covering it more or less thickened and multicarinate.

Scales in 17 rows.

- A. Portion of rostral visible from above equal to the distance between it and the middle of the frontal.
 - V. 144-176. Brown with small yellow spots below
 - V. 184-195. Black, with large yellow spots
 - V. 185-234. Brown, usually with transverse series of yellow, black-edged ocelli.
- B. Rostral ridged above, the part visible longer than the distance between it and the middle of the frontal.
 - V. 155-168. Belly brown with yellow spots
 - V. 180–188. Rostral as long as the distance between it and the parietals
 - V. 203-213. Rostral as long as the distance between it and the hinder end of the parietals

ellioti, p. 75.

nitidus, p. 76.

ocellatus, p. 76.

dindigalensis, p. 77.

beddomei, p. 78.

[p. 78. macrorhynchus,

A lateral series of large Tellow spors often

extending across the belly

Scales us 19 person

wood такоп. р. 79

rebrokmentus, p 82

broughomi, p. 83.

petern, p B4.

liurs, p 84.

pulnevenne, p. 83

philippes, p 87

melanopaster, p. 86.

II Tail obliquely truncate above the truncated portion large flat or concave forming a circumscribed disc, covered with thickened be \$11 or multicarinate arales Scales in 13 rows nacrolepus p 19 V 127-140 Scales in 17 cows A Portion of restral visible from above not or not much longer than its distance from the frontal Belly yellowish, or brown V 119-146 ceulanicus p 80 or rellow and brown Belly yellowish, V 127-128 146-157 with large black or brown blotches or echoeps, p 81. cross bers V 127-136 3 to 6 large red spots on each fp. 81. ende of the body in front, and I more on the tail

B. Portion of rotted variety from above distency longer than its distance from the frontal.

Vill-137 A jellow strenk along each sale of the body in front.

V 185-172 A broad vellow (end) stripe

along each side of the body

A. Rostral not completely separating the nasals, mout obtuse V 154-153 Black with large red spots on the sole of the neck and tail V 101-180 Brown with small yellow spots

Scales in L7 rows.

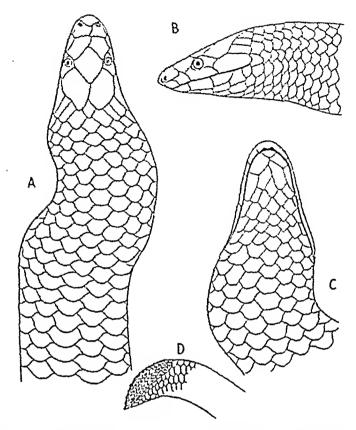
below and on the sides
V 174-185 Purplan brown with trans
verse series of yellow black-edged occili
B Routed completely separating the nassle,
snout pointed.

V 181 180 Belly brown with yellow spots or ereas bars, or all yellow. V 141-185 A lateral yellow streps, belly black

V 191-210 Rostral as long as the dutance between it and the hunder end of the frontal

Scales in 19 rows.

Rostral insually not separating the natele ... grander, p. 85.



23.—Uropellis ceylanicus. (B.M. 74.4.29.86-87). A. Dorsal, B. Lateral, and C. Ventral view of head. D. Three-quarter view of tail.

33. Uropeltis ellioti.

Siluboura ceylonicus (not of Cuvier) Gray, 1845, Cat. Liz. Brit.

Mus. p. 142 (Madras: London).

Siloboura ellioti Gray, 1858, P. Z. S. p. 262, fig.—Silybura ellioti,
Peters, Serp. Fam. Uropelt. 1861, p. 21; Gunther, P. Z. S.
1875, p. 228; Boulenger, F. B. I. 1890, p. 265, and Cat. Sn.
Brit. Mus. i, 1893, p. 154; Wall, J. Bombay N. H. S. xxix,
1923, p. 357; Beddome (in part), Ann. Mag. Nat. Hist. (5) xvii, 1886, p. 20.

Snout acutely pointed; portion of rostral visible from above as long as the distance between it and the middle of the frontal, separating the nasals for more than half their length; eye one-third to half the length of the ocular shield. Scales

in 17 rows 1 144 176 on and a laff times as broad as the adjacent scales (5 lt Tail obliquely truncate, the truncated portion not perfectly flat the disc well-defined covered with it ck be tel or multicarmate scales, terminal sente large lepretued with small tubercles above ending in a transverse ridge with two points

Dirk brown uniform or with small Jellow spots above and larger nes below a more or less distinct yellow line on each si le of the n ek a yell w stripe on each side of the tail connected with its fell w by a transverse bar across the anal region

Total length 250 diameter 7 mm

Range Hills of Peninsular In lea Western Chats south of the Gos Cap to Timercelly Eastern Chats (Shevaroys Combators district S Arcot Jalarpet Viragapatam district, Canjam)

34 Uropeliis nitidus

S house nated Beddome 18 & P Z & p J34 (Anamallays) Landon) and Ann Mag Nat Hart [3) xxv. 1886 p 191 Booleager B B 1 800 p 225 and Cat So. Brit Mag 1803 p 191 Wall J Bornbay N H 8 xxix 1923 p 257

Snout acutely pointed portion of rostral visible from above as long as the distance between it and the muidle of the frontal, separating the masais for more than belf their length, eye less than half the length of the ocular shield Scales in 17 rows , V 184 195 one and a third times as broad as the adjacent scales C 5-11 End of tail slightly flattened above without well defined disc the terminal scales atrongly multicarmate, terminal scute as in ellion

Black with distant large yellow spots below, which usually alternate but sometimes meet to form cross-bars

Total length 340 dismeter 10 mm

Range Anaimalas Hills (Cochin aufe) 4 000-5 000 feet

35 Uropeltis ocellatus

Sciptures Section 18:53 P 2 S p 225 (Wale Ghat Scipture section) and Hartess J Med. So vi 18:53 p 40 S f t 1 Signar London) and Hartess J Med. So vi 18:53 p 40 S f t 1 Signar London) and Hartess J Med. So vi 18:53 p 10 S f vi 18:53 p 10 S f vi 18:53 p 17 Boolleague F B I 3:50 p 12:2 and Cat Su real 18:50 p 17 Boolleague F B I 3:50 England N 3:50 S f vi 18:50 F Sequence S f vi 18:50 S f vi 18:

Snout acutely pointed portion of rostral visible from

above as long as the distance between it and the middle of the frontal, separating the nasals for more than half their length; eye one-fifth to one-third the length of the ocular shield. Scales in 17 rows; V. 185-234, one and a half times as broad as the adjacent scales; C. 6-11. Tail as in nitidus.

Yellowish or brown above, almost uniform or with trans-

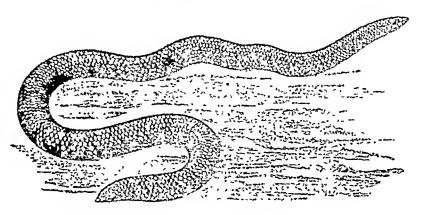


Fig. 24.—Uropeltis ocellatus. (After Boulenger, F.B.I. 1890).

verse series of small, yellow, black-edged ocelli; belly brown with large yellow spots or eross-bars, or yellow mottled or blotched with brown.

Total length: 530, diameter 15 mm.

Range. Western Ghats south of the Goa Gap; common in the Nilgiri and Anaimalai Hills.

Viviparous, producing from 3 to 5 young at a time.

36. Uropeltis dindigalensis.

Silybura dindigalensis Beddome, 1877, P. Z. S. p. 167 (Sirumallays, near Dindigal; London), and Ann. Mag. Nat. Hist. (5) xvii, 1886, p. 13; Boulenger, F. B. I. 1890, p. 264, and Cat. Sn. Brit. Mus. i, 1893, p. 152; Wall, J. Bombay N. H. S. xxix, 1923, p. 357.

Snout acutely pointed; portion of rostral visible from above longer than the distance between it and the middle of the frontal, separating the nasals for more than half their length; eye one-third the length of the ocular shield. Scales in 17 rows; V. 155-168, one and a half times as broad as the adjacent scales: C. 5-10. Tail as in ellipti.

adjacent scales; C. 5-10. Tail as in *ellioti*.

Dirty yellowish above, the scales more or less thickly speckled with brown, or with brown spots; belly dark brown, with yellow spots or irregular cross-bars; a yellow streak on

the lips continued along each side of the neck tall yellow below with a large brown spot behind the vent

Total length 3"0 hameter 12 mm

Range S India Summalas Hills Madura district 4 000 5 000 feet

37 Uropeltis beddomei

Salphura boddomi Ghother 1852 Ann. Mag Vat. Hist (3) ix. p 55 (Anamalla): Lon ion) and Rept But Ind. 1864 p 190 pl. xpi fig F Boulenger F B L 1870 p 265 and Cat Sa. lint Mus 1, 1893 p 153 Wall J Bombay V II S xxix 1923 D 357

Silphura ellion (in part) Beldome 1886 Ann. Mag Not Hist (5) EVU. b 10

Snout scutely pointed portion of rostral visible from above as long as the distance between it and the posterior extremity of the frontal shield separating the massis for more than half their length eye one third the length of the ocular shield. Scales in 17 rows V 180-188 one and a third times as broad as the adjacent scales C 6-7 Tail as in ellion

Brown above the median 6 or 8 dorsal scale rows with minute yellow spots these are on the sides of the scales and form more or less distinct longitudinal lines lower parts lighter brown with rellowish spots which are confined to the posterior margins of the scales a yellow streak on each inde of the neck a yellow ber scross the anal region.

Total length 250 diameter 7 mm.

Range & India Anarmalas Hills

38 Uropeitis macrorhynchus

Sulphura macrorhyncha Beddoma, 1877 P Z S p. 167 (above Ponachi; London) and Ann. Mag hat Hart (5) XVII. 1886 p 19 Bouleager F B 1 1800 p 264 and Cat. So. Brit Mos. 1893 p 133; Wall J Boulbay \ H 8 xxxx, 1923 p 357; Roux, Rev Sume Zool xxxv 19*8 p 441

Snout acutely pointed, rostral strongly ridged above strongly projecting the portion risible from above as long as the distance between it and the end of the parietals separ ating the nasals for more than half their length, eye one-fourth to one third the length of the ocular shield Scales in 17 rows 1 203-213 one and a third times as broad as the adjacent scales C 6 Tail as in ellioti

Upper parts uniform brown lower parts brown and yellow the latter colour comined to the posterior half of the scale, a yellow streak from the mouth along each side of the neck another on each side of the lower surface of the tail connected with its fellow by a cross-bar on the anal region Total length 740 diameter 13 mm

Range S India Anaumalas Helia 3 000-4 000 feet.

39. Uropeltis wood-masoni.

Silybura melanogaster (not of Gray) Günther, 1875, P. Z. S. p. 227. pl. xxxi, fig. A (Palni Hills : London).

Silybura wood-masoni Theobald, 1876, Cat. Rept. Brit. Ind. p. 135

(Palni Hills; Calcutta).

(Fain Hills; Calcutta).

Silybura nigra Beddome, 178, P. Z. S. p. 154, and Ann. Mag. Nat. Hist. (5) xvii, 1886, p. 12 (Palni Hills; London); Boulenger, F. B. I. 1890, p. 263, and Cat. Sn. Brit. Mus. i, 1893, p. 151; Wall, J. Bombay, N. H. S. xxix, 1923, pp. 359 and 388.

Snout acutely pointed; portion of rostral visible from above as long as or longer than the distance between it and the middle of the frontal, sometimes completely separating the nasals; eye one-third to one-half the length of the ocular shield. Scales in 19 rows; V. 166-183, one and a half times as broad as the adjacent scales; C. 6-11. Tail as in nitidus.

Black, brown or dark violet above, uniform or with transverse series of small, round, yellow spots or ocelli; a lateral series of large irregular bright yellow spots often extending across the belly; or the belly entirely black.

Total length: 270; diameter 10 mm.

Range. S. India. Anaimalai and Palni Hills, Travancore, Tinnevelly: one example from the Nilgiris.

Wall (1923) states that it is the commonest snake in the

Palni Hills above 6.000 feet.

Silvbura wood-masoni has been referred to the synonymy of pulneyensis. The type, however, is still in existence and in good condition: it is an undoubted example of the snake usually called nigra.

40. Uropeltis macrolepis.

Silybura macrolepis Peters, 1861, Serp. Fam. Uropelt. p. 904 (type loc. unknown; London); Günther, Rept. Brit. Ind. 1864, p. 189, pl. xvii, fig. B; Beddome, Ann. Mag. Nat. Hist. (5) xvii, 1886, p. 24; Boulenger, F. B. I. 1890, p. 269, and Cat. Sn. Brit. Mus. i, 1893, p. 159; Wall, J. Bombay Nat. Hist. Soc. xix, 1909, p. 756, and xxix, 1923, p. 356; McCann, ibid. xxix, 1924, p. 1062 1924, p. 1062, fig.

Snout rounded; portion of rostral visible from above distinctly less than its distance from the frontal; eye usually more than half the length of the ocular shield. Scales in 15 rows; V. 128-140, one and a half times as broad as the adjacent scales; C. 7-10. End of tail obliquely truncate above, the truncated portion flat or concave, covered with thickened bi- or tricarinate scales, forming a disc; one and a half to two times as long as broad; terminal caudal scute large, depressed with small spines above, ending in a transverse ridge with two points.

Black or dark purplish-brown, each scale with a light margin; a short, broad, yellow or orange stripe on the lips and sides of the neck continued as large upots on the anterior part of the body and sometimes as amaller ones throughout its whole length a broad vellow or orange strine on each side of the tail A specimen in the British Museum locality unknown has a brost orange stripe occupying three scalerows along each flank throughout the whole body

Total length 300 dismeter 12 mm

Range Bombay Hills between late 18° 7 and 19° 7 h Very common in Mahahleshuar during the rains according to McCann (1924)

41 Bropeltis eeylanieus

Uropelus crylanicus Curue 18 9 Reg Anim 2nd ed 1 p 76 Ceylon Paris) Colobiene ceylonicus Dum &

c'Organi, Parath-Calabrana erjanatus, Dum a. 1111.

Hat 'at Rept v. 1853 p. 185 pl 112 g. 3-3-3lighems
or Gancia Clather 192. Ann Mag Ant Hat (3) ix. p. 185,
2014bran berne Ginther 1824. Ann Mag Ant Hat (3) ix. p. 185,
2014bran berne Ginther 1824. Ann Mag Ant Hat (3) ix. p. 185,
2014bran berne Date 1850 p. 285, and Gat Here
Birth Mag Anthrope P. B. 1 1850 p. 285, and Gat Here
1875 p. 1871 bran 1872 p. 1885 p. 285, and Gat Here
1875 p. 1871 bran 1872 p. 1872 p 358 text-fire

Sujours storte Beddome, 1853 P Z S p 225 pl xxv fig i (Shavaroy H lis London) Gunther Rept Brit Ind. 1864.

p 15 pl syr 5 g 5 5 5 5 p 2 6 pl sxrl, 65 t and Ann. Mag bet Hart 65 xru 1855 p 14 (highest

S lyburs buntered a Guether 1864 Rept Brit Ind p 191 pl xvit. fig H (Deccan London)

S hybers sulpherreases var exaulato Beddome, 1886 Ann Mag Nat Hut (5) zvn, p 15 (Wynaed Malaber London)

Snout obtusely pointed portion of rostral visible from above distinctly less than its distance from the frontal eye usually more than half the length of the ocular shield scales in 17 rows V 119-146 and one a half times as broad as the

adjacent scales C 8-12 Tail se in macrolepis

Brownish or blackish above uniform or with yellowish apota transversely arranged (shorter) or with a Jellow lateral stripe (becatenata) belly yellowish with or without dark brown or black spots or entirely brown or black surface of tail brown or black in the middle yellow on the side Var ganalate is brown above yellowish below with narrow dark brown annuh

Total length 455 diameter 12 mm

Range S India The Western Ghats from Castle Rock to Travancore Shevaroys Beddome a specimen said to have come from Ganjam district is probably incorrectly labelled as regards locality

The commonest species in the Travancore Hills.

42. Uropeltis arcticeps.

Silybura arcticeps Günther, 1875, P. Z. S. p. 229, fig. (Tinevelly Hills; London); Boulenger, F. B. I. 1890, p. 268, and Cat. Sn. Brit. Mus. i, 1893, p. 157; Wall, J. Bombay N. H. S. xxix,

Sn. Brit. Alus. 1, 1893, p. 101; Wall, J. Bomoay N. H. S. XXIX, 1923, p. 358.—Silybura nilgherriensis var. arcticeps Beddome, 1886, Ann. Mag. Nat. Hist. (5) xvii, p. 16.
Silybura madurensis Beddome, 1878, P. Z. S. p. 802 (Cumbum Hills, Madura; London), and Ann. Mag. Nat. Hist. (5) xvii. 1886, p. 16; Boulenger, F. B. I. 1890, p. 267, and Cat. Sn. Brit. Mus. i, 1893, p. 156; Ferguson, J. Bombay N. H. S. x, 1895, p. 70; Wall, ibid. xxix, 1923, p. 358.

Silybura nilgherriensis var. picta Beddome, 1886, Ann. Mag. Nat. Hist. (5) xvii, p. 16 (near Pirmede, N. Travancore; London).

Snout obtusely pointed; portion of rostral visible from above equal to or a little less than its distance from the frontal: eye one-half to one-fourth the length of the ocular shield. Scales in 17 rows. V. 127-128, 146-157, nearly twice as broad as the adjacent scales: C. 8-10. Tail macrolevis.

Black or dark purplish-brown above, uniform or the scales edged with yellowish, or the colours reversed, or yellowish spotted with black; yellow (orange) below, with large black blotches or cross-bars, or almost entirely black or purplish-

brown.

Total length: 370, diameter 11 mm.

Range. S. India. The Western Ghats south of Palghat; from sea-level (Alleppey) to about 5,000 feet in the Travancore

Hills; Tinnevelly Hills.

Variety arcticeps is known from two specimens only; they are from the Tinnevelly Hills and their ventral count is 127-128. The ventral count of 12 examples of madurensis from the Travancore Hills ranges from 146-157. Except for this difference I can find no character by which to separate them.

43. Uropeltis rubromaculatus.

Silybura rubromaculata Beddome, 1867, Madras Quart. J. Med. Sci. xi, p. 15, fig., and J. Soc. Bibl. Nat. Hist. i, 1940, p. 316 (reprint) (Anamallays; London), and Ann. Mag. Nat. Hist. (5) xvii, 1886, p. 14; Boulenger, F. B. I. 1890, p. 268, and Cat. Sn. Brit. Mus. i, 1893, p. 157; Wall, J. Bombay N. H. S. xxix, 1923, p. 358.

Snout obtusely pointed; portion of rostral visible from above equal to its distance from the frontal; eye equal to or more than half the length of the ocular shield. Scales in 17 rows; V. 127-136, one and a half times as broad as the adjacent scales; C. 7-10. Tail as in macrolepis.

Dark brown above the hinder part of each scale dull yellow or yellowish-brown, or the two colours in almost equal pro-

VOL. III

82

portions the same below but the yellow colour predomin ating from 3 to 6 large blood red spots on each side of the neck and fore part of the body and one on each side of the tail

near the vent Total length 380 diameter 12 mm

Range 8 India Analmsial and Ailgiri Hills 4000-5000 feet.

44 Oropoltis rubrolineatus

Suppura rubrol acota Gunther 1815 P Z S p 228 (Travancore Hills London) Beddome, Ann. Mag Nat Hat. (5) xvi. 1886 p 14 Boulenger Fanna Brit Ind. 1890 p 288 and Cat. Sa. But. Mas i. 1893 p 165; Perguson, J Bombey N H S z, 1895 p 70 Wall, flid xxix, 1923 p 358

Snout obtusely pointed portion of rostral visible from above a little longer than its distance from the frontal, diameter of eye not half the length of the ocular shield. Scales in 17 rows V 163-17° one and two-thirds times as broad as the adjacent scales C 6-8 Tail as in macrolepis

Blackish brown with a yellowish (bright red in life) stripe along each aids of the body and tail occupying the greater part of scale rows 1 2 and 3 ventrals with irregular spots of the

same colons

Total length 400 diameter 12 mm Ronge Indu Western Ghata south of the Palghat Cap Ans malal and Travaneous Hills

45 Uropeltis phipsoni.

S lyburu ellecti (in part) Günther 1864, Rept. Brit. Ind. p 1807 Beideme Ann. Mag Net. Hat (5) xvil. 1886, p 70 Silybur på gervet ifann, 1885, Ann. Mag Nat Hatt (5) i. p. 184 (Bomber Chata London) Boulemer Frama Brit Ind. 1890, p 286 and Car. Sn. Hat Mos. I, 1893 p 135; Wall, J Bombsy N H. S xxix, 1823 p 337

Smout obtasely pointed portion of rostral visible from above distinctly longer than its distance from the frontal eye half the length of the ocular shield. Scales m 17 rows . V 138-157 one and a half times as broad as the adjacent scales C 7 12 Tail as in macrolepus

Brown or purplish brown uniform or with yellowish dots above a more or less distinct reliew streak along each side of the neck and fore part of the body a yellow stripe on each ands of the tail connected with its fellow by a transverse bar across the anal region

Total length 280 diameter 9 mm.

Range India The Western Ghata from the Bombay Hills to the Anaimalai Hills

46. Uropeltis myhendræ.

Silybura nilgherriensis var. myhendræ Beddome, 1886, Ann. Mag. Nat. Hist. (5) xvii. p. 15 (Myhendra Mt., S. Travancore; London).—Silybura myhendræ, Boulenger, F. B. I. 1890, p. 267, and Cat. Sn. Brit. Mus. i, 1893, p. 156; Ferguson, J. Bombay N. H. S. x, 1895, p. 70; Wall, ibid. xxix, 1923, p. 358.

In general scalation similar to phipsoni. V. 139-156; C. 6-8.

Dark purplish-brown above, each scale with a crescentic yellowish posterior border; the yellow colour on the scales may increase in extent and form more or less distinct transverse cross-bars, at any rate on the anterior part of the body; lower parts yellowish, more or less thickly spotted or barred with brown or black; the dark coloration of the back may be continued round the body as annuli.

Total length: 540, diameter 17 mm.

Range. S. India. Western Ghats south of the Goa gap; Nilgiris, Travancore, 2,000-4,000 feet.

47. Uropeltis broughami.

Silybura broughami Beddome, 1878; P. Z. S. p. 800 (Sirumsllays, Madura Dist.: London), and Ann. Mag. Nat. Hist. (5) xvii, 1886, p. 11; Boulenger, F. B. I. 1890, p. 264, and Cat. Sn. Brit. Mus. i, 1893, p. 152; Wall, J. Bombay N. H. S. xxix, 1923, p. 359; Roux, Rev. Suisse Zool. xxxv, 1928, p. 441. Silybura levingii Beddome, 1878, P. Z. S. p. 801 (Palni Hills, 4000 ft.: London).

Snout acutely pointed; rostral much produced both anteriorly and posteriorly, ridged above, the part visible equal to the distance between it and the hinder end of the frontal, separating the nasals for more than half their length; eye not half the length of the ocular shield. Scales in 19 rows; V. 195-230 (181 Roux), one and a half times as broad as the adjacent scales; C. 7-10. Tail as in macrolepis.

Brown above with more or less distinct transverse series of small, yellow, black-edged ocelli; sides with large, irregular,

yellow spots; ventrals dark brown.

Total length: 410, diameter 11 mm.

Range. The Palni and Sirumalai Hills, Madura district; Nilgiris.

48. Uropeltis maculatus.

Silybura maculata Beddome, 1878, P. Z. S. p. 154 (Anamallays; London), and Ann. Mag. Nat. Hist. (5) xvii, 1886, p. 22; Boulenger, F. B. I. 1890, p. 261, and Cat. Sn. Brit. Mus. i, 1893, p. 149; Ferguson, J. Bombay N. H. S. x, 1895, p. 70; Wall, ibid. xxix, 1923, p. 356.

Snout obtusely pointed; portion of rostral visible from a 2

above equal to its distance from the furnish or a little longer; massis in contact with one another, eye half the length of the coulor should or a little lens. Scala in 17 700- V, 15-105, on a distant times as Benedia the Adjacent scales, C, S-33. The old shalf times as Benedia other adjacent scales, C, S-33. The old shows a month or freshly keeled, it reminant scote with mannet to therefore above change in a transverse ridge with two months.

Dark brown or black above black below, the ventrals and adjacent caudals with light margins—a series of orange (red in life) blotches along the side of the neck and fore part of the

body and also along the hinder part of the body and tail Total length 390, diameter 11 mm

Range S India Analmaiai and Travancore Hills, 6 000-7,000 fees

49 Uropeltls peters!

Sulphora Peters Beddome 1878 P 2 S p 154 (Anamallays) Londoni 2nd Ane Mag hat Hist (5) 2nu 1886 p 22, Boulseaper F B 1 1890 p 201 and Cat Sa Drit Mus. 4, 1883 p 148 Wall, J Bombay N 11 S 221, 1922 p 350

fanct obtastly pointed perion of routed wishle from above shorter than its distance from the frontal; nassle in contact with one another; eye one bird the length of the contact shield. Scale in 17 over 131-180 one sent from times as broad as the signed acides; C 6-11 Tal compressed, slightly awollen nounded above, the terminal scales field or strongly multicarnate; terminal scutte ending in

Brown with or without yellowish dots above belly with small gregalar yellow spots, no yellow band on the aide of the

Total length 190 diameter 6 mm Range Anaimalai Hills, 4 000-5 000 feet

50 Uropeltis Hura

Shifteen hard Gunther 1875 F Z S p 228 pl. xxxi, Hg R (Matura Hills London); Redform, Ann May Nat Hart (5) xxx, 1889 p 18 Boulemer F B I 1800, p 252, and Cat Sn. Firth May 4, 1822 p 149, Watl, J Bourhay N H. S xxx, 1923 p 268

Soon acutely possible provides from the frontal vasible from above as long as it admired, from the firmulal, masals in contact with one another, we met quite that the length of the coulse should Soates when Soates when Soates when Soates when Soates and a half times as broad as the adjacent scales, C. 8-12 Tail algibity compressed, promote, counted acude acute smultearnate, terminal scute ending in a fransverse ridge with two points

Purplish-brown above, each scale edged with darker, and with transverse series of small yellow, black-edged ocelli; sides and lower parts with large, alternating black and yellow spots or cross-bars.

Total length: 320, diameter 9 mm.

Range. Madura and Tinnevelly Hills, 3,000-5,000 feet.

51. Uropeltis pulneyensis.

Plectrurus pulneyensis Beddome. 1863, P. Z. S. p. 228, col. pl. xxv, fig. 2 (Palni Hills; London & Calcutta).—Rhinophis pulneyensis, Günther, Rept. Brit. Ind. 1864, p. 187, pl. xvii, fig. C.—, Silybura pulneyensis, Beddome, Ann. Mag. Nat. Hist. (5) xvii, 1886, p. 23; Boulenger, F. B. I. 1890, p. 260, and Cat. Sn. Brit. Mus. i, 1893, p. 147; Roux, Rev. Suisse Zool. xxxv, 1928, p. 441; Wall, J. Bombay N. H. S. xxix, 1923, pp. 356, 392.

Silybura guentheri Beddome, 1878, P. Z. S. p. 801, and Ann. Mag.

Nat. Hist. (5) xvii, 1886, p. 23.

Snout acutely pointed; portion of rostral visible from above as long as the distance between it and the middle of the frontal, completely separating the nasals; eye one-half to one-third the length of the ocular shield. Scales in 17 rows; V. 161–180 (154 Roux), one and a half times as broad as the adjacent scales; C. 6–13. Tail slightly compressed, rounded above, the terminal scales above feebly multicarinate, terminal scute ending in 2 points.

Dark brown or blackish above, with or without minute specks; a yellow lateral stripe anteriorly; belly with large yellow spots, usually alternating, or cross-bars. The type

of guentheri has the lower parts entirely yellow.

Total length: 380, diameter 12 mm.

Range. Palni and Travancore Hills, Madura district

5,000-7,000 feet.

Beddome states (1886) that it is common in the Palni Hills, Madura district (5,000-7,000 feet), particularly on the higher ranges where it is very abundant; it is often found about the roads in wet weather, or dug up in gardens; it is also found under rocks.

52. Uropeltis grandis.

Rhinophis grandis Beddome, 1867, Madras Quart. J. Med Sci. xi, p. 15, fig., and J. Soc. Bibl. Nat. Hist. i, 1940, p. 316 (reprint) (Anamallays; London).—Silybura grandis, Günther, Ann. Mag. Nat. Hist. (4) i, 1868, p. 3; Beddome, ibid. (5) xvii, 1886, p. ii; Boulenger, F. B. I. 1890, p. 261, and Cat. Sn. Brit. Mus. i, 1893, p. 148; Wall, J. Bombay N. H. S. xxix, 1923, p. 359.

Snout pointed'; rostral sometimes separating the nasals, the portion visible above equal to the distance between it and the middle of the frontal; eye one third the length of the oculer

sheld. Scales in 19 rows, V 198-218, one and a half times as broad as the adjacent scales, C 6-12 Tail feebly compressed, rounded above, preasal and caudal scales multi-carnate in the male, terminal scale ending in two points

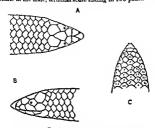


Fig 25 -Uropaine grands:
A. Dorsal B Lateral view of head. C Dorsal view of tail.

Dark violet, belly with large alternating yellow spots or cross-bars Total length 470, diameter 12 mm

Range Anaumalas Hills, 4,000-4,700 feet

53 Uropeltis melanogaster

Mynics (Croiss) realimopaster Gray, 1838, P. Z. St. p. 264, fig. (Crylon, London)—Elemophies realimopaster, Paters, Serp. Zan. Uropeli 1866, p. 19 pt. in fig. 4.—6)-6/strae realimopaster, Paters, Serp. Backgross Ann. Mag. Nat. Hast. (3) zrv., 1858, p. 20; Soulangter, 21, 21 pt. 20; p. 20;

Snort sestely pointed, portion of rostral visible from above as long as the distance between it and beyond the middle of frontial, completely separating the massi; over not half the length of the ocular sheld. Scaler in I'rows, to 14:1-16. The front much broader than the adjacent shelds, of 8:10. That feebly compressed, rounded above, slightly avoilers the minust scales above smooth or feebly keeled, so the standard scale shows a condition of refer by keeled, or with two points.

Dark brown, with yellow spots confluent and forming an irregular lateral stripe; sometimes the belly is spotted with vellow.

Juveniles are yellowish above, each scale with a large brown centre; lower parts entirely yellow.

Total length: 250, diameter 8 mm.

Range. Cevlon. Hills of the Central Province.

54. Uropeltis phillipsi.

Silybura phillipsi Nicholls, 1929, Ceylon J. Sci. B, xv, p. 153, and Ceylon J. Sci. D, ii, 1929, p. 97 (Meniakanda Group, E. Matale Hills, Ceylon; London).

Snout acutely pointed; portion of rostral visible above as long as the distance between it and the hinder end of the frontal, completely separating the nasals; eye one-third the length of the ocular shield. Scales in 17 rows; V. 197-210; not much broader than the adjacent scales; C. 6-9. Tail as in melanogaster.

Dark bluish-grey, each scale of the 7 median dorsal rows with a yellow centre forming longitudinal lines down the back; a lateral series of vellow blotches or vertical bars.

Total length: 230, diameter 7 mm.

Range, Ceylon. Known only from the type-locality and Mouskandy Hills, Gammadura.

Genus RHINOPHIS.

Rhinophis Hemprich, 1820, Grundr. Naturg. p. 119 (type oxyrhynchus), in J. Wagler's, Nat. Syst. Amph. 1830, p. 195; Beddome, Ann. Mag. Nat. Hist. (5) xvii, 1886, p. 5; Boulenger, F. B. I. 1890, p. 254, and Cat. Sn. Brit. Mus. i, 1893, p. 140. Dapatnaya Kelaart, 1853, Prodr. Fauna Zeyl. ii, p. 16 (type

lanka- divana).

Mytilia Gray, 1858, P. Z. S. p. 57 (type gerrardi). Morina Gray, 1858, P. Z. S. on pp. 260 and 264 appears to be a clerical error for Mytilia.

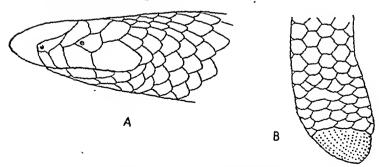


Fig. 26.—Rhinophis oxyrhynchus. A. Side view of head. B. Side view of tail.

88 T. . .

Eve in the ocular shield no temporal, no mental groove Tail cylindrical terminating in a flattish or convex round or oval rigore shield.

In all the species the anout is acutely pointed and compressed the rooteal shield extending forwards to well beyond the mouth and backwards separating the navel shields and parily the performals

key to the Species

bed towish the shorter than the shielded part of the bed towird separating the massles brakes of Cf rows Ventrals 143 163 Ventrals 123-121	hlychi, p \$5 deminionalkapi In 89
If Caudel does a long as or longer than the shielded part of the head routest reparating the	ir ss

A Regard not more than half as long as the scholard part of the head scales in 15 12 roses a line conver

is Diese conver (p 89
Scaled in 15 years
Scaled in 17 years

V 180-204 Belly specked with black and whole; fp 80 and with large policy epote

V 180 Belly white with large black spots; no jergesonsenes.
... jergesonsenes.
... preparents

V 153 183 Uniform brown above and below philosomers
A Dissofter to at

Beales in 17 come (p. 61

Beales in 17 come (p. 61

B. Rostral more than half as long as the shielded

V 238-216 [231] A black versebral line between purchases

V 211 227 Un form brown shore and below ary hymnolus
1 238. A broad orange restricted stripe with large
black Blocking. [See appendix

55 Rhinophis blythl

deres perculature.

Minha empletons Gray 1532 P Z S b 283 (Crylon, London) hostest not indeed above and separating the prefrontals for more than bull their length the pottion visible as long as the distance between it and the hinder part of the frontal; frontal as long as or longer than the parietals; eye less than half the length of the ocular shield. Scales in 17 rows. V. 148-168, a little broader than the adjacent scales; C. 5-9.

Caudal disc convex, one-half to three-fifths as long as the shielded part of the head, hardly visible from below, covered with minute tubercles or spicules; some of the caudal scales with faint keels.

Dark brown, each scale below with a yellow spot or margin; a series of yellow vertical spots on each side of the fore part of the body, usually connected by a lateral stripe which may extend the whole length of the body; a yellow ring round the base of the tail.

Total length: 370, diameter 12 mm.

Range. Ceylon. Hills of the Central, Uva and Southern Provinces.

56. Rhinophis drummondhayi.

Rhinophis drummondhayi Wall, 1921, Sn. Ceylon, p. 43, and J. Bombay N. H. S. xxix, 1923, p. 356 (Uva Patnas, Ceylon; London).

In scalation similar to R. blythi. V. 173-191; C. 4-8.

Brown above, uniform or each scale dappled with whitish or with a light margin; below the same, but the white more extensive; a series of light spots or vertical bars along each side of the body present or absent; a more or less complete light ring round the base of the tail.

Total length: 300, diameter 9 mm.

Range. Ceylon. Hills of Central and Uva Provinces.

57. Rhinophis sanguineus.

Rhinophis sanguincus Beddome, 1863, P. Z. S. p. 227 (Cherambody, Malabar; London); Günther, Rept. Brit. Ind. 1864, p. 186, pl. xvii, fig. A; Beddome, Ann. Mag. Nat. Hist. (5) 1886, xvii, p. 8; Boulenger, F. B. I. 1890, p. 256, and Cat. Sn. Brit. Mus. i, 1893, p. 143; Ferguson, J. Bombay N. H. S. x, 1890, p. 70; Wall, ibid. xxvi, 1919, p. 557, and xxix, 1923, p. 355; fig. tail.

Rhinophis microlepis Beddome, 1863, P. Z. S. p. 227, pl. xxvi, fig. 2 (Wynsad; London).

Rostral not ridged above, not separating the prefrontals for half their length, the portion visible as long as the distance between it and the hinder part of the frontal; frontal as long as the parietals; eye one-third the length of the oeular shield. Scales in 15 rows; V. 182-218, one and a third times as broad as the adjacent scales; C. 5-10. Caudal disc convex, longer than the shielded part of the head, covered with spicules or

fine strue, caudal scales smooth above; caudal and preanal scales below multicarriate in the male

Bluish black above, with or without small light spots, belly and outer 3-4 scale-rows bright red, more or less thickly spotted with black, tail red below, the middle part usually hiack.

Total length 400 diameter 10 mm

Runge Mysore (Koppa, Lalea), Wynaed, Nilgiris, Travancore Tinnevelly

Wall states that it is common in the Nilgiris; the young are born m July, August and September (1919)

58 Rhinophia homolepia.

Rhospha homoleya Hampreh 1829 Grood, Naturg p 119; Priem Sup Fan Uropil, 1831 p 14, oo phi, 5, 2 S (Dyfon) Dopotopo morphon Khadari, 1832, Proft Fan Zeyl, ib. p. 31 and Cat Ro, Brit Mun 4, 1932, p 147; Wall Rh, Oylon, 1934; p 23, and J Bonhay N H S xxxx 1932, p 245; p. 235— Bandyola mentjonus Beddoms, Ann. Mag Nat Hink (5) xviii 1839 F 7, 19 Georger, F B 1 1800, p 236.

Mining persons Gray, 1838, P Z S pp 58 & 263, pl mil (Ceylon : London) Rostral obtusely ridged above, not separating the prefrontals

for more than half their length, the portion visible as long as the distance between it and the binder end of the frontal or a little longer, frontal as long as the parietals; eye onethird to one-fourth the length of the ocular shield. Scales in 17 rows V 180-204, a little broader than the adjacent scales, C 3-5 Candal due convex as long as or longer than the shielded part of the head, well vimble from below, covered with spicules arranged in longitudinal series

Blackish brown each scale of the back with a fine margin of yellow, those on the belly with a broader one, a series of triangular yellow spots along each aide of the body

Total length 280, diameter 8 mm.

Bange Ceylon. Hills of the Central, Uva and Sabararamuwa Provinces

Remprich's homolepus has been very clearly figured by Peters, and this name which has priority, should be used.

59 Rhinophis fergusonianus.

Eksnephis formanismus Boulemet. 1898, J. Bombay, N. H. S. X. P. 125 (Cardanon Hills, Thursacove, London), and Cat. Sta. Bril. Mas. m., 1835 p. 898. Ferguson, J. Bombay N. H. S. X. 1870, p. 10, Wall, fled. KER, 1923, p. 254.

Closely allied to homolepis, differing as follows -Candal disc considerably longer than the shielded part of the head, scarcely visible from below, covered with fine

striæ. V. 180. Black above, with some fine white dots; sides white, dotted and spotted with black; belly white with large black spots more or less confluent and forming a zig-zag; caudal disc black, edged all round with yellow.

Total length: 320, diameter 7 mm.

Known only from the type-specimen.

60. Rhinophis philippinus.

Typhlops philippinus Cuvier, 1829, Règne. Anim. 2nd ed. ii, p. 74

Typhlops philippinus Cuvier, 1829, Règne. Anim. 2nd ed. ii, p. 74 ("Philippines").—Rhinophis phillippinus, Müller, Zeitschr. f. Physiol. iv, 1832, p. 248; Dum. & Bibr. Hist. Nat. Rept. 1854, vii, p. 154, pl. lix, fig. 1; Peters, Serp. Fam. Uropelt. 1861, p. 15; Gunther, Rept. Brit. Ind. 1864, p. 184.

Rhinophis planiceps Peters, 1861, Serp. Fam. Uropelt. p. 17, pl. i, Rhinophis planiceps Peters, 1861, Serp. Fam. Uropelt. p. 17, pl. i, fig. 1; Beddome, Ann. Mag. Nat. Hist. (5) xvii, 1886, p. 6; fig. 1; Beddome, Ann. Cat. Sn. Brit. Mus. i, Boulenger, F. B. I. 1890, p. 255, and Cat. Sn. Brit. Mus. i, 1893, p. 141; Wall, Sn. Ceylon, 1921, p. 36, and J. Bombay N. H. S. xxix, 1923, p. 355.

Like homolepis but with fewer ventrals and a different coloration. V. 153-182; C. 3-6.

Uniform brown, each scale with a lighter margin, sometimes a yellowish blotch near the head or on the anal region.

Total length: 280, diameter 9 mm.

Range. Ceylon. Hills in the Central and Sabaragamuwa Provinces.

61. Rhinophis travancoricus.

Rhinophis travancoricus Boulenger, 1892, J. Bombay N. H. S. vii, p. 318, pl., and Cat. Sn. Brit. Mus. i, 1893, p. 143 (Travancore; London); Wall, J. Bombay N. H. S. xxix, 1923, p. 355.

Rostral not ridged above, separating the prefrontals for half their length, or a little more or less, the portion visible as long as the distance between it and the hinder part of the frontal; frontal as long as the parietals; eye one-third the length of the ocular shield. Scales in 17 rows; V. 132-146, one and a half times as broad as the adjacent scales; C. 5-7; caudal disc as long as the shielded part of the head, almost flat, covered with spicules.

Dark purplish-brown, the scales on the sides and belly edged with whitish; on the throat and fore part of the belly almost completely whitish; anal region black; lower surface

of tail yellow.

Total length: 180, diameter 7 mm.

Range. Travancore (Trivandrum, Pirmed, Ernakulam). Found at sea level and in the hills to about 4,000 feet.

62 Rhinophis punctatus

Rhotophu pencione Medir 1832 Zurich's Physici w. p. 248 107 108 no. Part Serp sau Uneyell 1861, p. 15, co. 19 107 2 Boddome Ary Mag Nat Hist (5) zvu, 1865, p. 6, 1801 p. 18 1 1 1 209 p. 253 and Cat Se, Brit Mus i. 1802 p. (4) Willy Spol 2rd (, 1903 p. 8, Sr I Null 1807 p. (4) Willy Spol 2rd (, 1903 p. 8, Sr I Null 1807 p. (4) 11, p. 33 and 3 I Homizay N II S ztz., 1822.

Rhinophus porrectus Wall 1921, Sn Ceylon p 25, and J Bombay N II S zzuz 1921 p 155 (Maradankadawala, between Chilaw and Puttalam N W Frovinces, London)

Rostral strongly ridged above, separating the prefrontals for more than half their length, the portion visible more than half the length of the shielded part of the head, frontals shorter than the panetals eye one third to one fifth the length of the ocular shield Scales in 17 rows, V 236-246 (281) not or scarcely broader than the adjacent scales, C 7-9, caudal disc convex, as long as the shielded part of the head, covered with minute apenes or tubercles

Yellowish each acale with a large central black spot, except the two senes on either aide of the vertebral line, aides and lower surface of tail yellow, except for a median

black stripe

Total length 380, diameter 8 mm

Range Caylon Hills in the Central Province (Kandy,

Perademya), NW Province
I am unable to find any character by which to separate Wall a porrectus from punctatus except that it has more ventral ahields viz 281 RA punctatus honever, is known at present from only a few specimens, and more material will no doubt show that its variation is considerably greater than 236-246

63 Rhinophis oxyrhynchus

Typhipp czyphyschus Schneder, 1801, Hist Amph II, p 341 (Cypin) — Minophu szyphyschus, Hemprach, Grundr Naturg 1820) — Minophu szyphyschus, Hemprach, Grundr Naturg 187 (Coult Series Sopp Fan Uropekt 1861 p 9 ft in 187 (Coult Series Sopp Ban Uropekt 1861 p 9 ft in 1863 p 1864) — Mag Nat Hat (2) 1844, p 3 Buchneyr B 1 1850 p 1864 (Series Series EXIX 1923 p 356

Dopolnoyo lonkofroma Kelaars 1853 Prode Faun Zeyl li, p 16 Mytica unumaculate Gray, 1858 P Z S p 264 fig (Ceylon.

Rostral strongly rulged above, separating the prefrontals for more than half their length, the portion visible more than half the length of the shielded part of the head , frontal as long as the parietals, eye one third to one fourth the length of the ocular shield Sesses in 17 or 19 rows, V 211-227, scarcely broader than the adjacent scales, C 5-7, tail as in Uniform brown, each scale with a lighter margin; anal region yellow and sometimes a yellow spot below the tail; of stouter proportions than punctatus.

Total length: 400, diameter 10 mm.

Range. Ceylon (the low country in the Northern Province, Mullaitivu; Vavoniya).

Genus PSEUDOTYPHLOPS.

Pseudo-typhlops (in part) Schlegel, 1839, Abbild. Amphib. p. 40 (type by elimination philippinus).

Uropeltis, Boulenger, 1890, F. B. I. p. 253, and Cat. Sn. Brit. Mus. i, 1893, p. 139, and other authors.

Eye in the ocular shield; no temporal; no mental groove. Tail cylindrical, swollen at the end, obliquely truncate above, with a large, subcircular, spinose shield. Scales in 19 rows.

64. Pseudotyphlops philippinus.

Uropeltis philippinus Cuvier, 1829, Reg. Anim. 2nd ed. ii, p. 76 ("Philippines": Paris); Dum. & Bibr. Hist. Nat. Rept. vii, 1854, p. 161, pl. lix, fig. 2; Peters, Serp. Fam. Uropelt. 1861, p. 20.—Pseudo-typhlops philippinus, Schlegel, Abbild. Amph. 1839, p. 40.

Uropellis grandis Kelaart, 1853, Prodr. Fauna Zeyl. ii, p. 15; (Kerinday, near Matura, S. Prov., Ceylon: London); Günther, Rept. Brit. Ind. 1864, p. 188; Beddome, Ann. Mag. Nat. Hist. (5), xvii, 1886, p. 9; Boulenger, F. B. I. 1890, p. 254, and Cat. Sn. Brit. Mus. i, 1893, p. 139; Green, Spol. Zeyl. 1906, p. 220; Wall, Sn. Ceylon, 1921, p. 26, and J. Bombay N. H. S. xxix, 1923, p. 354.

Uropeltis saffragamus Kelaart, 1853, Prodr. Fauna Zeyl. ii, p. 15 (Ratnapoora, near Adam's Peak, Ceylon).

Uropellis pardalis Kelaart, 1853, Prodr. Faun. Zeyl. ii, p. 16; Gray, P. Z. S. 1858, p. 263. (Matura, Ceylon: London.)

Rostral obtusely ridged above, separating the nasals for half or more than half their length, the portion visible as long

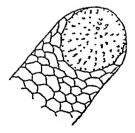


Fig. 27.—Dorsal view of tail of Pseudotyphlops philippinus.

as the distance between it and the middle of the frontal or a little longer; frontal as long as or a little longer than the parietals; eye one-third the length of the ocular shield. ANTITUE ANTITUE

2.0

V 129-147, scarcely broader than the adjacent scales; C 6-9
Tail obliquely truncate above the truncated portion expanded
and carrying a flat, subcircular shield, as long as or longer
than the shielded part of the head, covered with coarse spines
Bark heaver of blacks above the course with villow

Dark brown or blackish above, the young with yellow spots yellow beneath, the young with dark brown spots

Total length 285 diameter 22 mm The largest species of the family

of the family

Range Ceylon at low elevations (Trincomaire, Matara,
Kolonno, Korle, Badulla)

Family ANILIDAL

Nymide Boulenger, 1899 P B I p 249, and Cat Sn. Brit Mus. i, 1893, p 131

Bones of the skull soldly united, prefrontal in contact with the mad, supratemporal internalisted in the cranial wall, quadrate very short, vertically placed, dentary family statehed to the structure of a coronoid bone, premarillary teeth present or about Vertures of peirus and hind limbs, terminating in a claw like spur on each side of the vent. Hypapophyses about throughout the vertical column

Range Three genera are known, two in the Oriental Region, the third, Anthus, in tronical S America.

Genus CYLINDROPHIS.

PIPE BALKES

Cyindrophu Wagier, 1828 Icod, Amphib p 8 and Syst, Amphib 1330 p 195 (type respiradors), Boulenger F B. I 1890, p 249 and Cat Sn. Brit Mos. I, 1833 p 174, Wall, Ra. Cepton, 1921, p 18, Mobandra, Proc Ind. Acad. Son. IV, 1939, p 230 and V. 1937, p 109

Tech robust, sobequal, 9 to 12 in each maxilla, none in the premarilla Hard small, not dustmet from neck, or strength of the s

The heart ", resurs seebly enlarged. Tail very short is difficult being cowing to the extreme shortness of the tail, and thick and is framehed with a series of long convoluted folds through which the undwided sulcus winds (when seen in the organ at rest). them are no stomes

Range. Ceylon; the Indo-Chinese region; the East Seven species are known; two inhabit the area covered by this work.

Key to the Species.

Breadth of frontal equal to or greater than half the distance between the centres of the eyes; rostral narrow, as high as broad; back uniform dark brown, or with light cross-bars

rufus, p. 96.

Breadth of frontal not half the distance between the centres of the eyes; rostral broader than high; back with a black network enclosing large light spots maculatus, p. 98



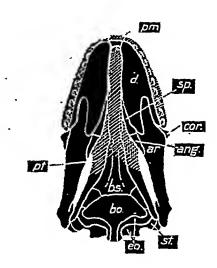




Fig. 28.—Skull of *Gylindrophis rufus*. A. Dorsal view. The quadrate and mandible have been removed. B. Ventral view. C. Left mandible, outer view.

ang., angular; ar., articular; bo., basioccipital; bs., basisphenoid; cor., coronoid; d., dentary; co., exoccipital; cp., ectopterygoid (or transpalatine); f., frontal; m., maxilla; n., nasal; p., parietal; pm., premaxilla; prf., prefrontal; pt., pterygoid; q., quadrate; sp., splenial; st., supratemporal. 65 Cylindrophis rufus

98

THE RED TAILED PIPE STAKE

Angous ruffa Laurent 1768 Syn Ropt p 71 (Surmann) -Toring rufa Schlege Phys Berp 1837 is p 8 figs 1-3 and Abbild Amph b 1844 p 111 col pl xxxx, figs 11 17 (Java) -Cyl ndrophu rufa Cray Zool Mac 1842 p 46 — yindqophu rufus Bou enger f B I 1830 p 250 fig and Cat fin. Brit Mus 1833 p 135 Flower P Z S 1890 col pl xxxvii. Wall J Bombay h H S xx x 19°3 p 354 Rm th. J hat H s Soc Siam 1914 p 10; S.hm dt Copeta, 1973, p 80; Haas Zool Jahrb Jena (Anat) 1v 1931 (3) p 431 fig skull Bourret Serp Indo Ch ne 1936 p 24 Radovanovic Ze tachr

Nature Jena lex 1937 p *00 (ng skull) inquie reviale non Linn.) Russell 1801 Ind Serp 11, pp 31 & 32, nis xxvii and xxviii (Java Tranquebar)

Cylindrophia respondena Wagler 1838 Icon, Amphib p 5 sol. pl v fiz 1 (Java)

Laurenti e description Corpore arquali ruffo Imeus trensversal bus elbis interruptis abdomine verso not bear much resemblance to the enake under discussion and he may have meant something quite different Schlegel

appears to have been the first author to describe it properly and hie coloured f gure leaves one in no doubt as to what epecies he meant

Head depressed snout broadly rounded rostral about as broad as high breadth of the frontal equel to or greater than helf the distance between the centres of the eyes (less than helf in two examples from Burma), supraocular about as large as the frontal lerger than the parietals aix supru lebials 3rd and 4th largest and touching the eye three infraiabials in contact with the enterior genials posterior genuals emell or absent Ventrals scarcely broader than the adiacent acales enal divided

Two races can be distinguished

I Cylindrophia rufus rufus

19 or 21 acsles round the body (21 for specimens from the

Indo Chinese Region) 1 186 216 C 5-7

Dark brown or black above highly indescent with or without narrow light cross bars usually elternating with one another and extending only to the middle of the back dark brown or black below with broader white (reddish or orange in I fel cross bars which are complete or elternate with one enother on the mid line Tail below red or orange except the extreme trp

Total length 865 tail 15 mm.

Range Stam end French Indo-China S of 'at 17° N

the Malay Peninsula end Archipelago

II. Cylindrophis rufus burmanus, subsp. nov.

19 scales round the body. V. 201-225; C. 5-7.

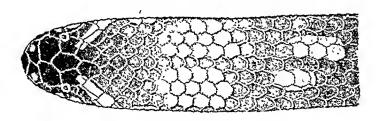
Colour as in rufus rufus but the belly more heavily marked with dark brown and the cross-bars less evident; sometimes almost entirely dark brown.

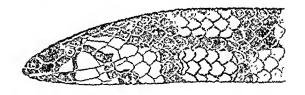
Size much smaller.

Total length: 330, tail 10 mm.

Range. Tenasserim and Burma as far North as Myitkyina.

Cylindrophis rufus is a fairly common snake in the great central plain of Siam, living in the rice fields, or in gardens





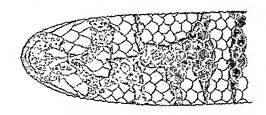


Fig. 29 .- Cylindrophis maculotus. (B.M. 1905.3.25.76-81.)

in the vicinity of houses. In soft earth it can burrow easily and when not in search of food lives in the ground. It takes readily to water. Its food consists of other snakes and eels and the manner in which it can dispose of a meal even longer

than itself is astomehung. I have never known one to blist when handled, but when alarmed it flatient the whole body and curis the tail up over its back showing the reddish under surface. Schmidt (1923) records a specimen taken in a sait water layon past life Annam

66 Cylindrophis maculatus

CEYLON PIPE SMAKE.

Augme morvints Lenn, 1734 Men, Ad. Fral. p. 21 pl. xm. 66, 3 (America") and Swit Net 2, 10th cell 1756, p. 523, Remote Ind. Serp. 1, 1801 p. 3° pt. zm. ("Remote "), Renheste 1707, p. 1801 p. 1801, p. 1

Eye smaller than in refys frontal narrower, its breadth less than balf the distance between the centres of the eyes, unually smaller than the supersociars, rostral broader Scales in 19 or 21 rows. 3 183-212 C 4-4

Above with a black net-work enclouing two series of large reddish brown spots lower parts white variegated with black or barred with black and white

Total length 600 tail is mm

Range Ceylon Found in the plains and in the hills at low

atitude. A common unake
Two or three young are produced at a time. They are
unusually large measuring from 127 to 137 mm in length
when horn. Wall state that it is a very placid make making
no attempt to recape when captured. It have beneath the soil

Family XENOPELTIDÆ.

Xstopelhids Cops, 1854, Proc. Acad. Philad p. 230; Bouleager. F B I 1890 p 278 and Cat En. Ern Mos 4, 1893, p 187

Bones of the shull mind, premarillatoothed, in contact with the marilla, recipierypoid boosely attached to the marilla; prefrontal in contact with the mass! on postfrontal, surps temporal interests of the extensal wall extending posteriorly beyond it, surpensing the quadrate which is sever short and virtually placed. dentary attached to the articular anteriorly, entirely free behand, no cormond bone. Hypapophrase

absent in the posterior part of the vertebral column.

Xenopelite has several unique characters. In addition to the occupital shield and loss of the postfrontal bone, the auditory bones are different from those of any other snake that I

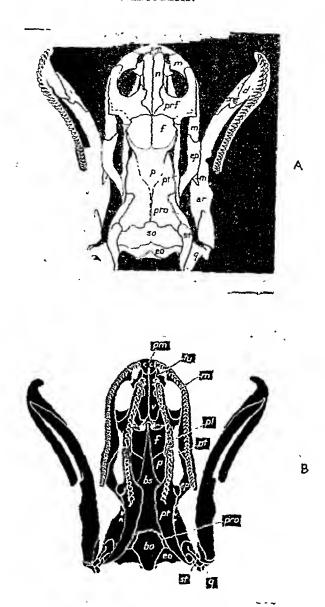


Fig. 30.—Skull of Xenopeltis unicolor. A. Dorsal, B. Ventral view. ang., angular; ar., articular; bo., basicecipital; bp., basisphenoid; ca., columella auris; d., dentary; co., exoccipital; cp., ectopterygoid (or transpalatine); f., frontal; fp., foot-plate; H 2

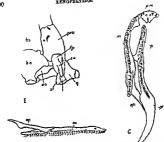


Fig 30 (cont).—C Maxilla and polatomaxillary arch. D Maxillary extoplerage d articulation E har bones

i intercalary bone m., marille; m., maral p parsetal por procentral at supratemporal; a vomer

know except Cylindrophie refer in which the condition is much the same. The femerica ovals and foot-plate which file into it are unusually larger out the columnia same is short of the columnia ovals. The columnia same is short and not defined a short the same size which is intercalated between them (fig. 2).

Genus XENOPELTIS

Zenopilus Remwardi in Bo * 18*7 Isu p 561 (type unicolor); Bouleager F B I 1899 p 276 and Cat Sn Brit Mus i 1893 p 187 Radovanovie Ze tschr Naturw Jena, izu; 1937 p 204

Theth small equal closely set and attoragly curred with edged crows a dureded outwards 4 or 5 on each ade in the premaralla as set all the set of 5 on each set in the premaralla as set and the set of 5 on each set of write all closely set of the set of 5 on each set of write large hitelds unclaiming a large occupital in contact with the frontal and a large procession of onesi A mental groove Body epimeircal scales smooth in 15 rows through out ventrals well developed that all notes in should all parter

67. Xenopeltis unicolor.

SUNBRAM SNAKE.

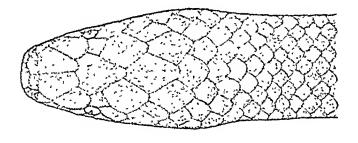
Xenopeliis unicolor Reinwardt in Bole, 1827, Isis, p. 564 (Java); Theobald, Cat. Rept. Mus. Asiat. Soc. Bengal, 1868, p. 64; Boulenger, F. B. I. 1890, p. 276, fig., and Cat. Sn. Brit. Mus. i, 1893, p. 168; Flower, P. Z. S. 1899, p. 657; Wall, J. Bombay N. H. S. xix, 1909, p. 292, col. pl., and xxix, 1923, p. 361, and xxx. 1925, p. 806; Thompson, P. Z. S. 1913, p. 415; Smith, J. Nat. Hist. Soc. Siam, i, 1914, p. 12; Pope, Rept. China, 1935, p. 77, pl. v; Bourret, Serp. Indo-Chine, 1936, p. 27, fig.; Mahendra, Curr. Sci. Bangalore, vi. 1938, p. 569, fig.

Xenopellis concolor Remwardt, in Boic, 1827, Isis, p. 564 (Java).

Xenopeltis leurocephala Reinwardt, I. c. s. p. 564 (Java).

Tortrix xenopeltis Schlegel, 1837, Phys. Serp. ii, p. 20, pl. i, figs. 8-10, and Abbild. 1844, pl. xxxv (subst. name).

Head much depressed, snout rounded; nostril between two small nasals. Rostral broader than high, well visible from above; internasals much smaller than the prefrontals;



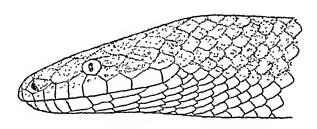


Fig. 31.—Xenopeltis unicolor. (B.M. 1925.5.25.6-7.)

frontal large; supraoculars very small; interparietal about as large as the parietals; usually a pair of enlarged shields vis-a-vis the latter behind the interparietal; a large preoculas extending well on to the upper surface of the head; 2 large postoculars indistinguishable in shape from the temporal shields; 8 supralabials, first in contact with the internasal 102 BOIDA

m front of the assal 4th and 5th touching the eye; a pair of small genials, in contact with the first 3 infralabials | Scales quite smooth highly polished V 173-196, for specimens from the Indo Chinese region , C 21-31

The hemipenis is forked near the tip, but the sulcus hifurestes about half way down it is longitudinally pleated throughout and in addition there are 4 or 5 transverse flounces , the distal half of the organ has some call-culate areas. There are

no spunes Black to chocolate brown above, highly indescent, the outer scale rows edged with white wentrals and outermost row of scales white, uniform or edged with brown; hinder part of head and neck white in the young

Total length 2 1050 tail 95 , 3 850, tail 70 mm Range, Burma as far north as Mystkynas, Siam, French

Indo-China, the Malay Peninsula and Archipelago records a specimen from Awangtung Province, southern

China, and Theobald one from the Andamsns

The Indescent Earth Snake or Sunbeam Snake, so called ou account of the highly polished and indescent nature of its scales, is common in southern Burms and Tenasserim, Siam and southern French Indo-China It inhabits chiefly the ricefields, and gardens in the vicinity of human habitations living m the earth or hiding beneath logs or stonrs. In soft earth it can bury itself rapidly, and those that I have kept in captivity spent their days bidden in this manner assuing forth only at might I never knew one attempt to bite when handled, but when excited it could vibrate its short tail with extraordinary speed, so rapidly that at times I have believed I could hear the movement Its food consists of other makes small rodents, and frogs, birds have also been recorded in its diet

Family BOIDÆ

Jena Z Nature Ixx 1935 p 1 Nuble & Schmidt, Pr Amer Phil. See Philad luxun 1937 p 637

Palato-maxillary arch movable, premaxillar, teeth present or absent, pterygoid extending to the quadrate, prefrontal m contact with the nasal, supratemporal attached scale like to the cransum, supporting the quadrate, which is vertically placed, dentary firmly attached to the articular, a coronoid bone Vestiges of pelvis and hind limbs, terminating in claw like spur, usually visible on each aide of the vent, they are longer in the male than in the female

Range The tropical regions of the world.

BOIDÆ. 103

The family has been divided into two subfamilies, the Boinæ and the Pythoninæ, on the presence or absence of a supraorbital bonc. This character may serve as a useful means of recognition, but it is doubtful if it expresses phylogeny. The loss of the supraorbital bone has occurred, no doubt, independently in different genera, and its absence does not necessarily express relationship. Constrictor (Boinæ) for instance is in many ways more closely related to Python (Pythoninæ) than it is to Eryx (Boinæ).

Two genera are represented in the Oriental Region. They are easily distinguished from one another by the characters

given on p. 105.

The Pythons and Boas are the largest representatives of the serpent family now living. Fossil remains show that at one time there were much larger forms. Gigantophis from the Eccene of Egypt is estimated to have reached 50 feet in length. Such dimensions are not attained by any species existing to-day. Authentic records, taken from individuals that have been measured after death, and not from dried and stretched skins. show that they do not exceed 28 or 30 feet or a little more. The rate of growth of P. molurus and P. reticulatus in the first three or four years of life has been recorded, and in spite of the size which these species attain, it does not differ greatly from the rate which governs the growth in many other snakes. Sexual maturity is reached in 2½ or 3 years, and average length, that is 12 fect for P. molurus and 18 or 20 feet for P. reticulatus, in 5 or 6 years. Both species, however, are known to grow considerably larger, and it may be that the Boidæ differ from other snakes in continuing to grow throughout life. The very large individuals which were recorded 30, 40 and 50 years ago, are seldom met with to-day. The spread of population into districts previously untouched, makes it increasingly difficult for any snake of really large proportions to conceal itself safely.

The weight of a large Python is considerable. Wall records a P. molurus of 19 feet in length that weighed 200 lb., and

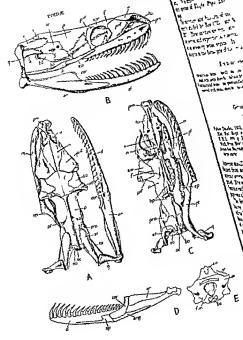
a P. reticulatus of 28 feet, that scaled 250 lb.

The Pythons are oviparous and guard their eggs by coiling themselves around them during the incubation period. Observations on "brooding" mothers to ascertain if the temperature of the body is raised during this period, are conflicting. A very eareful series of observations recorded by Bendict (1932), appears to show that the body temperature is raised between 2 and 4 degrees Centigrade during that time.

The vestigial hind limbs are used by the male during courtship to stimulate the female by scratching her on the

body above the cloaca.

The Boidæ kill their prey by constriction. No bones are broken in the process, death being caused by asphyxiation.



PYTHON. 105

The habit of constriction, however, is not confined to this family. It is shared by some of the Colubridæ, particularly the larger species of *Elaphe*, *Ptyas*, *Zaocys* and some species of *Boiaa*.

The structure and function of the labial pits have been recently studied by Ros (1935) and Noble and A. Schmidt (1937). These cavities are richly supplied with blood-vessels and nerves, and experimental observations indicate that they act as accessory sense organs. In many respects they are analogous to the facial pits of the Crotalidæ.

Key to the Genera.

Genus PYTHON.

PYTHON.

Python Daudin, 1803, Mag. Encycl. An. 8, March, p. 434, and Hist. Nat. Rept. v. 1803. p. 226 (type molurus); Boulenger, F. B. I. 1890. p. 245, and Cat. Sn. Brit. Mus. i, 1893, p. 80. Stull, Proc. Boston Soc. Nat. Hist. xl, 1935, p. 393. Aspidoboa Sauvage, 1884, Bull. Soc. Phil. Paris, (7), viii, p. 143 (type curta).

Anterior maxillary and mandibular teeth very long. Head distinct from neck, with large symmetrical shields; rostral, anterior supralabials and anterior and posterior infralabials pitted. Eye with vertical pupil. Scales smooth, in 60-75 rows. Ventrals rather narrow; subcaudals generally paired. Hypapophyses absent in the posterior part of the vertebral column.

The hemipenis of P. molurus and of P. reticulatus is as follows:—It is forked for about half its length, the lips of the sulcus being very prominent; throughout the whole length there are longitudinal folds, and just proximal to the point of bifurcation of the sulcus there is a fleshy, tongue-shaped papilla; there are no spines.

Fig. 32.—Skull of Python reticulatus. A. Dorsal. B. Lateral, and C. Ventral view. The right palato-maxillary arch has been removed. D. Inner view of right mandible. E. Occipital region. ang., angular; ar., articular; bo., basioccipital: bp., basisphenoid; ca., columella auris; cor., coronoid; d., dentary; co., exoccipital; ep., ectopterygoid (or transpalatine); f., frontal; fm., foramen magnum; m., maxilla; n., nasal; oc., occipital condyle; p., parietal; pl., palatine; pm., premaxilla; prf., prefrontal; pro., prootic; pl., pterygoid; pff., postfrontal; q., quadrate; so., supraoccipital; sor., supraorbital; sp., splenial: st., supratemporal; tu., turbinal (or septomaxilla); v., vomer.

108 B 102

Range Africa the Oriental Region and East Indian Islands 7 species are known two inhabit the area covered by this work.

Key b the Species

Routel and first two aupralabula prated \$ 243. 270

makerue, o 106 (p 109 Rostral and first four supralab als & sted \$ 297 retolious 33° € 75-102

68 Python molurus

INCIAN PARK ROCK PETHON

Russell, 1794 In t Sorp a pp 27 to 30 pls xx; to xxiv [" Yedda Pods Canjam and Lizagepatem) and p 44 pl 19 f Bors Calcutta

Coluber molurus Luna 1752 Hyat hat 10th ad p 225 [Indis]

And St. Ceyton, 1872 p 48 hg. Leach J Bonnbay N H.B. SERSIL 1878 p 408 and Feld, 1936 Fab p 404 and Das p 1856 Bourset Serp Indochuse 1938 p 185 Fraser Bornbay N H S 228 2 1937 p 463

Pictor eineren Schneider 1801 Hat Amphib il p 210 (based on Russel a Pedds Pods)

Pytion restores School for Le a p 2 3 (based on Russell a Pedda Pole: Python albume technoider I a a p 274 (based on Russell a Pedda

Pode! Python orbirulate Schaerder I e a p "76 (bereil on Russell a Bors) Coluber bonformes Shaw 1802 Cen. Zool 1 p 511 (based on

Rosse in Pedda Pous and Bors! Putton born Daudin, 1802 Hist Nat Bept, v p 228 (based on Russell a Born?

Fedda Poda Poda n, I e a p 241 pl lxiv (based on Russell's Pytion beritolus Schlegel (in part) 1837 Phys Serp 1il. p 403

pl x figs 1 4 Werner Loui Jahrb Byet RXV 1909 p 271. 313 fg & Pychon motorus 6 suttatus Herrina Ahh Sonckenb Net Cen and 1830 p "SI p vn trype for fixed as Java)
Pope Rept Chune, 1835 p 7° pl v Bourret Berp Indochine 1936 p 19 fig.

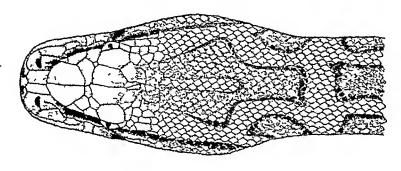
Python motorus va acrillata Werner 1899 Zool Garten, al-y 24 and Zool Jahre Syst zavu 1909 p 273 (India Ceylon) i p 24 and 2000 Jahrie Syst axvu 1905 p 166 Prate J Bombay V H S xxx (1) 19 p 166

Rostril at the posterior and upper part of a large anterior nated rostral with a deep pt on either a de unternasals during two pages of prefrontals the posterior pair smaller and often broken up frontal a little larger than the supra oculars often divided longitudinally parietal lorest and temporal regions covered with irregular scales " pre and 3 or 4 postoculars 11 to 13 supraisbuls the first 2 deeply puted 6th or 7th touching the eye or separated by suboculars in to 18 mirababale, the enterior ones long and narrow

PYTHON. 107

3 or 4 of the anterior and the same of the posterior feebly pitted; a well-defined mental groove: no proper genials. Scales in 60 to 75 rows, all quite smooth: V. 245-270, distinctly narrower than the breadth of the body: anal entire; C. 58 to 73 paired. Tail rather short.

Light yellowish to cream, greyish or brownish above, with a dorsal series of large, elongate, more or less subquadrangular dark grey, brown or reddish-brown. black-edged spots; these are usually more irregular in shape on the hinder part of the body; flanks with smaller, rounded or irregularly-shaped



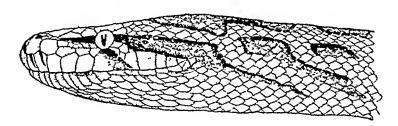


Fig 33 .- Python molurus.

spots of the same colour; a lance-shaped mark on the top of the head extending on to the nape; a dark streak on the side of the head, broadening behind the eye and extending past the angle of the mouth; a dark subocular streak; below yellowish, with a border of dark spots on the outermost row of the scales; tail below marbled with yellow and black

No words can adequately describe the wonderful sheen on the scales of the Python in life, particularly when the skin has just been shed. 108 Roth#

Total length —Spreament that exceed 4 metres (about 12 feet) in length are rare and there does not appear to any authento record of metrodays more than 64 metres (about 20 feet) in length. In girth P molurus is considerably greater than P reproducts of the same length.

Two races have been dutinguished -

Python molurus majurus

6th or 7th isbal touching the eye, lance-shaped mark on the top of the head usually distinct only posteriorly, 1 253 276

Rang Cipi m and Peninsular India to the extreme hunt of Sind and the Punjab m the North West, and to Bengal in the North East

Python molurus brestfatus

Lab als set trated from the eye by suboculers lance shaped mark on the head distinct throughout V 2th to 270

Range The whole of the Indo Chinese subregion , Southern

Chma Hong Kong Haman

In Southern In to Chins it is ran. It has been recorded in Burnas from as its south as Zimba Chaung Tavoy datinet, I obtained from the specimen in Sam at Rahang Lopban and Sunnchs in Freach Indo China it is received from Yina hang long-varyon. There are no anthentine records of the occurrence in Pennsular Sam or the Malay Pennsula, but it has been found in Man there is a specimen in Railfa Miseum and to have come from Pontanak, Borneo and it is recorded from (elebes

Wall has given good accounts of the Indian Python [1912 and 1921) and his coloured plate (1912) is excellent. The following remarks are taken mainly from his article. It is an inhabitant of the tangle but where this is not available is to be found near rivers and theels. It climbs well, and by means of its prehensile tail is capable of auspending itself from branches, there to wan until food comes within its reselt In water it is quite at home and might be considered setui advante in habit. Observations made in captivity have shown that it can remain submerged for half an hour. In northern India during the cold season it inhernates for some months returng into a hollow tree of hole in a bank or in the bills into some convenient care. It is one of the most lethargio makes and in its natural haunts exhibits hitle limidity, rarrly rousing itself sensually to escape Its movements are behoused and slow, in fact its stude of progression cannot be called anything but a crast This is in marked contrast to the more denderly built refreshme that in jungle and upon trees can move with considerable speed.

109 PYTHON.

The Indian Python is practically omnivorous, feeding on mammals, birds and reptiles indiscriminately. It seems to prefer mammals of relatively large proportions. Its strength is enormous. An individual 18 feet long has been known to overcome and devour a leopard measuring 4 feet 2 inches from nose to rump. Authentic records of its attacking human beings are rare. Wall records a case of a Chinese baby being devoured on an island near Hong Kong.

It is one of the few snakes that is eaten by man. who have tasted the flesh say that it is good. Æsthetie reasons no doubt prevent it from becoming a regular article of diet with all, but by many of the less fastidious peoples of India

and Indo-China it is eaten frequently.

The Indian Python, like all the Pythons, is oviparous. After depositing her eggs, the mother coils herself round them and remains with them until they hatch out. The number of eggs laid varies enormously: as many as 107 have been recorded.

Mating, in northern India, takes place during hibernation. The eggs vary slightly in size; some laid in the Berlin Aquarium averaged 120×60 mm. Hatchlings measure on an average 2 ft. 5 inches in length. The rate of growth in nature is not known, and the records of growth in captivity vary so greatly that they are obviously influenced by the conditions under which the snakes live.

69. Python reticulatus.

RETICULATED PYTHON.

Boa reticulata Schneider, 1801, Hist. Amph. ii, p 264 (based on Boa reticulata Schneider, 1801, Hist. Amph. ii, p 264 (based on Seba, i, pl. lxii, fig. 2, and ii, pl. lxxix, fig. 1; no type loc. given).—
Python reticulatus, Boulenger, F. B. I. 1890, p. 246, and Cat. Sn. Brit. Mus. i. 1893, p. 85; Werner, Arch. Nat. Berlin, lxxxvii, 1921, p. 236; Wall, J. Bombay N. H. S. xxix, 1923, p. 353, and xxxi, 1926, p. 84; Kopstein, Trop. Natuur, 1927, p. 65; M. A. Smith, J. Nat. Hist. Soc. Siam, i, 1914, p. 9, and xi, 1937, p. 61; Bourret. Serp. Indo-Chine, 1936, p. 16, fig.
Boa rhombeata Schneider, 1801, Hist. Amph. ii, p. 266 (based on Seba, ii, pl. lxxx, fig. 1).
Boa phrygia Shaw, 1802, Gen. Zool. iii, p. 348, pl. xevii (based on Seba, i, pl. lxii, fig. 2).
Coluber javanicus Shaw, l. c. s., p. 441 (Java).

Coluber javanicus Shaw, I. c. s., p. 441 (Java).

Like molurus in head scalation, differing as follows:-4 anterior supralabials deeply pitted; 2 or 3 anterior and 5 or 6 posterior infralabials feebly pitted; 6th or 7th supralabial touching the eye; no suboculars. Scales in 70 to 80 rows. V. 297-332; C. 75-102, mostly divided. Anal entire.

Light brown or yellowish above with a dorsal series of large darker brown, circular, oval or rhomboidal spots, often confluent with one another; each spot is edged with black 110 BOIDÆ

and outside again with yellow, these two colours descending upon the flanks in a regular series of vertical bars or V-shaped marks, each one of which encloses a white spot; whitsh or yellowah below, the outer scale rows spotted or dapped with brown. A black streak along the middle of the head and another on each node from the eye to the angle of the jaw

Total length—The Returnisted Python is the largest make luring today the South Auerston Ausconda mugic today the South Auerston Ausconda migut closely for second place. Authoritic measurement of specimens that have been killed show that it reaches a length of 27 or 28 feet. Greater lengths have been recorded, but they cannot be relead upon.

Range Tenaserim, southern Burma and Siam as far north as lat. 18°, French Indo-China as far north as Yen Bai in Tong King the Malay Pennsula and Archipelago; the Nicobay Islands

In Indo-China, in the regions in which it occurs, the Reticulated Python is not unrommon. Wall states (1926), "In Burms this Python is only met with in the densest jungles places unknown to Europeans with the exception of a few forest officers" This is strange, for in Siam its habits are the raverse and it is a frequent visitor to human habitations Flower who lived in Bangkok in 1897 and 1899, writes that " it was very numerous in the city and suburbs, and in almost every compound has been found in the last few years. It seems to prefre the busiest spots along the river, where boots are loading and unloading and hundreds of coolies pass to and fro At night it makes an easy living devouring fowls, ducks, cats and dogs" When I went to hive there a few years later it was quite as common, and for many years after, until the city became much larger and more crowded, I could usually catch two or three every year m my compound, which was within 100 yards of the main thoroughfare. Like the Indian Python the Reticulated Python is a great lovre of water and is seldom found far from it

All the weighth records show that it seems to prefer compositively small memoria as food rather than very large once it? Oven, however, shot one in Eugapore in the act of devouring a full bear Kopstein (1927) relates that in the Dutch East Indies a boy of 18 years of age was awallowed by one

As with most other snakes the number of eggs last varies with the use of the mother. A full grown female has been killed in Bengkok contained only 15 eggs. The incubation period ranges from 60 to 80 days and the young when born measure from 600 to 750 mm in length.

ERYX. 111

Genus ERYX.

SAND BOAS.

Eryx Daudin, 1803, Mag. Encycl. An. S. v. March, p. 437, and Hist. Nat. Rept. vii, 1803, p. 251 (type turcicus); Boulenger, F. B. I. 1890, p. 247, and Cat. Sn. Brit. Mus. i, 1893, p. 122; Stull, Proc. Boston, Soc. Nat. Hist. xl, 1935, p. 406.

Clothonia Daudin, I. c. s. p. 253 (type Boa anguiformis).
Gongylophis Wagler, 1830, Syst. Amphib. p. 192 (type Boa conica);
Boulenger, F. B. I. 1890, p. 246. Cursoria Gray, 1849, Cat. Sn. Brit. Mus. p. 107 (type elegans).

Anterior maxillary and mandibular teeth very long. Head not distinct from neck, covered with small scales except on the

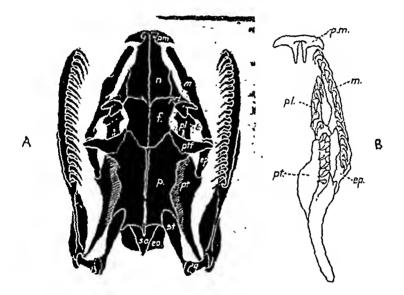


Fig. 34,-Skull of Eryx conicus. A. Dorsal view. B. Premaxilla and palato-maxillary arch.

ca., columella auris (or stapes); co., exoccipital; ep., ectopterygoid; f., frontal; m., maxilla; n., masal; p., parietal; pl., palatine; pm., premaxilla; prf., prefrontal; pt., pterygoid; ptf., postfrontal; q., quadrate; so., supraoccipital; st., supratemporal.

snout. Eye small or very small with vertically elliptic pupil. Body cylindrical, stout, scales small; tail very short; subcaudals usually single. Mental groove usually present. No genials.

Range. Africa; S.W. Asia to eastern Europe; Western

China and India.

Seven species are known, two of which inhabit India.

BOIDE

Key to the Species

No mental groove tail pointed A mental groove tail blunt

conscus, p 112 jakni johni p 113

70 Eryx confcus

RUSSELL'S SAND BOA

Russell 1798 Ind Serp a p 5 pl av (Madras)
Bos comes Schneider 1801 Hist Amphib u. p 208 and Denkschr p [5] Prater, and exx (1) 1924 p 166, France, and exxist

Bog pripring Shaw 1802 Gen Zool su, p 355 pl e (based on

Bog ernala Daudin, 1802, Hist Nat Rept v, p 210 (besed on

Ergs bengalmen Guerm 1830 Iconog Reg Anim Rept pl xx,

Rostral about twice as broad as high, just visible from above, without angular horizontal edge, mastri shi like, between the two masals and the internasals, only these scales enlarged, the rest of the head bung covered with small, obtusely keeled scales, 8 to 10 scales across the forehead between the eyes 10 to 15 scales round the eye, sometimes two series of scales separating the eye from the labials which are from 12 to 14 in number, no mental groove Scales in 40 to 85 raws, more or less strongly, sometimes tuberrularly, keeled, very strongly upon the tail V 162-196, C 16-24 Tail pointed.

The hemipens u not forked but the sulcus bifurcates near the tip of the organ, it is strongly flounced, the folds being arranged in oblique series distally they are joined together and form large cups

Yellowish, brownish or greyish above with a dorsal series of large, dark brown, black-edged spots, usually confluent with one another to form a zigzag stripe, lower parts yellowish or whitish the outer scale rows with small brown spots

Total length & 480, tail 35, Q, 940, tail 55 mm Brage Ceylon, the whole of India as far as Bihar and

Orassa in the north-cast, Naine Tal district in the Himalayas. and Sind and Haluchistan in the west, very rare in Ceylon Wall states that it is common in Cannanoro in the Malabar

113

district and Ghazipur in the United Provinces. It has been recorded from the Central Provinces at an altitude of 2,200 feet.

It feeds upon small mammals, birds, snakes and frogs. From 6 to 8 young are produced at a time.

Eryx johni johni *.

JOHN'S SAND BOA.

Boa johnii Russell, 1801, Ind. Serp. ii, pp. 18 & 20, pls. xvi & xvii (Tranquebar)—Eryx johni, Boulenger, F. B. I. 1890, p. 248, fig., and Cat. Sn. Brit. Mus. i, 1893, p. 127; Wall, J. Bombay N. H. S. xx, 1911, p. 1033, and xxi, 1911, p. 12. Eryz jaculus (non Linn.) Wall, 1910, J. Bombay N. H. S. xix,

p. 1000; Prater, ibid. xxx, 1924, p. 166. Eryz jaculus var. johni Ingoldby, 1923, J. Bombay N. H. S. xxix, p. 127; Wall, ibid. p. 353.

Rostral large, broader than high, well visible from above, with angular horizontal edge: nostril slit-like, between two

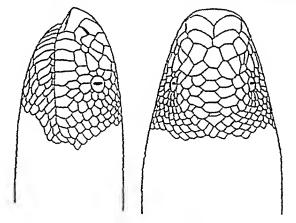


Fig. 35.—Eryx johni. (After Boulenger, F.B.I. 1890.)

enlarged nasals; usually two pairs of broad scales behind the rostral; the other scales on the top of the head in front of the eyes being larger than those posterior to them; 6 to 9 scales across the forehead between the eyes; 10 or 11 scales round the eye; sometimes two series of scales separating the eye from the labials, which are from 10 to 12 in number; a mental groove. Scales in 53 to 67 rows, more or less distinctly keeled. V. 190-210; C. 20-34; anal entire, small. Tail blunt, covered at the tip with a large rounded shield.

^{*} Named after the Rev. Mr. John of Tranquebar.

Hemipenis as in conscus but the bifurcation of the sulcus

farther back and the calvees more distinct

bandy grey or yellowish above the scales edged with dark brown or entirely brown above, uniform or with more or less distinct dark transverse bands, these bands usually distinct on the tail lower parts whitish spotted with dark brown, or almost entirely brown

Total length & 890 tail 90 Q 1000 tail 80 mm

Range North western India Sind , Rajputana , UP (Lucknow) Punjab Baluchistan , NWFP In the two

last named areas it meets the western form E , persious Russell's type-specimen which is beautifully figured, came from Tranquebar and he states that it is not uncommon in Bengal Whether this was true or not we cannot now say, but the regions to which he refers are well outside the area it now mhabita

Family COLUBRIDÆ

Celubrida Cope, 1893 Amer hat p 480, Boulenger (in part) F B I 1890 p 234 and Cat Sn. Brit Mus L 1893, p 189 Stepaeger & Barbour Check List N Amer Amph. & Rept 1939 p 85

Amblysephalida Boulenger P B I 1990, p 414 and Cat III 1896 p 438

Facial bones movable prefrontal not in contact with the massi supratemporal attached loosely to the skull, suspending the quadrate mandible without coronoid bone, teeth solid or the posterior 2 or 3 grooved. Range Cosmopolitan,

Key to the Subfamilies of the Colubrida

I No mental groove hypepophyses absent on the posterior dorsal vertebras DIPRADINAL D 115

A mental groove; hypapophyses present or absent on the posterior donal vertebras

A Ventral shields distinct Scales completely or almost completely

attached to the cuts mostral in a large concave shield maxillary teeth not grooved Nostrile not valvular usually lateral scales imbracate

Nostrils valvalar on the upper surface of the mout last f or 3 mamillary teeth enlarged and grooved ventrals

Palato maxillary arch edentulous except for a few manute teeth hypepophyses of the anter or thorac e vertebre penetrating the wall of the

XEVODERMINA p 123 COLUMNDER, p 155

HOMALOPSINE, p 379

DASYPELTINE P 403

B. No transversely enlarged ventral shields : head and body covered with small granular or tuberculate juxtaposed ACROCHORDINE, p. 131.

Subfamily DIPSADINÆ.

Dipsadidæ Günther, 1858, Cat. Sn. Brit. Mus. p. 162 (in part). Dipsadinæ Amaral, 1923, Proc. New Eng. Zool. Club, viii, p. 95. Amblycephalidæ Boulenger, 1890, F. B. I. p. 414, and Cat. Sn. Brit. Mus. iii, 1896, p. 438; Pope, Rept. China, 1935, p. 366.

Supratemporal very small, reduced to a short rod of bone interposed between the cranium and the quadrate; solid teeth in both jaws; hypapophyses present only in the cervical vertebræ; genials large, broader than long, touching the infralabials; mental groove absent in the Asiatic species.

Range. S.E. Asia; Central and South America.

Recent workers in this group have separated the American members from the Asiatic. The former can be connected, through Sibon (=Leptognathus) sibon, with the Colubrinæ;

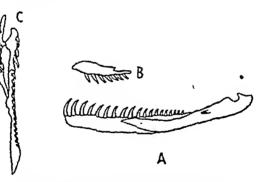


Fig. 36.—Jaw bones of Pareas monticola. A. Mandible. B. Maxilla. C. Palato-maxillary arch.

the Asiatic genera cannot be, the characters of the shields covering the lower jaw serving to distinguish them at once from all other snakes. Nevertheless, the two groups are closely allied to one another, and probably had a common origin. The mouth is peculiar in that the commissure extends far back beyond the fringe of the buccal membrane, while the short, high head and large eye bear a remarkable resemblance to that of the fœtal snake. Another feature of the Dipsadinæ is the enormous development of the nasal gland.

Key to the Asiatic Genera.

Scales in 15 rows; subcaudals paired PAREAS, p. 116. Scales in 13 rows; subcaudals single HAPLOPELTURA, p. 121.

Genus PAREAS

Amblycepholus (not of Zeder 1803) Kuld, 18*2, Iss P 474 (nom. monopenesses (not or Excess 1803) Authl. 15 %, has P 4 % (olds). Mod.] Bore, has 187 p 519 (type leave). Bonleager F B J. 1890 p 414 and Ca. Sn. Brit Min i 1805 p 440, and Arn. May hat Hat (8 xr 1914 p 484 Wall, Rec. Lot. Mins. 227 1922, p 19 Pope Rept. Chins. 1935 p 366 Bourret, 1935 p 166 Bourret, 1935 Serp Indochme 1938 p 419

Porece Wagler 1830 Svat Amphab p 181 (type cornates) Theobald, Rept Brit Ind. 1876 p "03

Eberkardna Angel, 1920 Bull, Mus hat nat Paris xxvi, p *91 (type E tout never

Maxillary bone short thin expanded vertically with from 4 to 9 subequal teeth preceded by an edentulous space mandibular teeth gradually decreasing in length prefrontal bone with a backward prolongation more or less completely roofing the orbit Head distinct from neck eve large or moderate with vertical pupil Body more or less com pressed tail moderate scales in 15 rows throughout sentrals rounded subcardals paired

Common characters unless otherwise stated -hostril in the nasal sostral as high as broad or a little higher usually first pair of genuals largest longer than broad in contact with the mental or separated from it by the first pair of

infralabials anal entire

Hemipenis deeply forked, without spines. Bange. The Indo-Chinese Subregion Southern China the

Malay Penusula and Archipelago About 15 species are recognised

The Indo-Chinese species fall into two natural groups those of Section I of the key being terrestrial in their habita those of Section II subarboreal. The members of each group are closely allied to one another and although the characters which distinguish them are somewhat unstable the combination given will always suffice. In disposition these small snakes are quet and moffensive. I have never known them to b te when handled. They are nocturnal in their habits and appear to live chiefly on small molluses. They are oviparous from 2 to 9 eggs being laid at a time

Key to the Species I. Vertebral scales not enlarged body not strongly compressed head distinct from neck eye moderate

[p. 117 Scales smooth Scales keeled таграньор macularius, p 113. II. Vertebral scales enlarged body strongly compressed head very dutinet from

neck eye large. a. Lorest in broad contact with the eye no preocular

b Lorent excitated from or just touching the eye a preocular

montrold p 118.

Frontal shorter than the parietal; prefrontal touching the eye hamptoni, p. 120. Frontal as long as or longer than the parietal; prefrontal excluded from the eve carinatus, p. 121.

72. Pareas margaritophorus.

Leptognathus margaritophorus Jan, 1866, Nouv. Arch. Mus. hist ust. Paris, ii, p. 8 (Siam; Paris).—Parcas margaritophorus, Theobald, Cat. Rept. Brit. Ind. 1876, p. 203.—Amblycephalus margaritophorus, Boulenger, Cat. Sn. Brit. Mus. iii, 1896, p. 445. Pareas mællendorffi Boettger, 1885, Ber. Offenb. Ver., p. 125, and 1888, p. 84, pl. ii, fig. 1 (Lo-fou-shan Mts., Canton; Frankfurt); Cochran, Proc. U.S. Nat. Mus. Ixxvii, 1930 (2) p. 37.—Amblycephalus mællendorffi, Boulenger, Cat. Sn. Brit. Mus. iii, 1896, p. 443, and Rept. Malay Pen. 1912, p. 210; Wall, Rec. Ind. Mus. xxiv, 1922, p. 23, and J. Bombay N. H. S. xxx, 1925, p. 245; Smith, Bull. Raffles Mus., No. 3, 1930, p. 88; Pope, p. 245; Smith, Bull. Raffles Mus., No. 3, 1930, p. 88; Pope, Rept. China, 1935, p. 373; Bourret. Serp. Indo-Chine, 1936, ii, p. 433.

Eye moderate, its diameter equal to or a little less than its distance from the mouth: internasals half, or less than half, as long as the prefrontals, the latter usually in contact with the eye; frontal about as long as broad, longer than its distance from the end of the snout, shorter than the parietals; loreal longer than high; I pre- and I postocular, the latter often united with a long crescentic subocular; temporals 2+3, usually long and narrow; 6 or 7 supralabials, 4th below the middle of the eye; scales smooth, the vertebrals not enlarged. V. & 138-153, Q 143-159; C. & 44-56, Q 32-42.

Hemipenis extending to the 13th caudal plate, very deeply forked; divided into two portions by a fold which runs obliquely forwards from the sulcus; distal to the fold the organ is calyculate, the calyces being relatively uniform in size but without scalloped edges; proximal to the fold the organ is papillose, the papillæ being triangular in shape, with

broad bases, and arranged in longitudinal folds.

Grey above with transverse bars on the sides composed of black and white spots, the anterior part of the scale being white, the posterior black; a white or yellow nuchal collar present or absent; lower parts whitish more or less thickly spotted or speckled with dark grey or black.

Total length: 3 345, tail 75; \$\times 470, tail 75 mm.

Range. French Indo-China; S. China; Hainan; Siam; Tenasserim; the Malay Peninsula as far south as Kelantan.

Common to many localities. Plentiful on Hong Kong Island, at Bangnara in Patani (sea-level) and at Dalat, on the Langbian Plateau, Annam, at 5,000 feet.

I have examined Jan's types of margaritophorus in Paris and have no hesitation in identifying them with the species

commonly known as mællendorffi.

73 Pareas macularius

Perces martiers as Trachald, 1863 J Lient Boy x, p. 54 Wartsban.

R Burma Lorden and Calcutta) Smith, Ree-Lied Reg. 11
1900 p. 400 and calcutta beauting to the College of B 1
1900 p. 400 and cat. Sn. Brit, Mos dis 1908 p. cr. R g. vers.

Not but Mos x. 1804 and cat. Sn. Brit, Mos dis 1908 p. cr. R g. vers.

Here p 416 ann (at 8a Bert Stor in 1900 p week. He had Mus 211 1800 p 21 and J Bornbay P H B 225. 1922 p 25 and 25 1822 p 25 and 2 Rept Brit Ind 1876 p 914 (Rangoon ; Calcutta) — Ambly orphillus molecute Foulenger F D I 1890 p 416 and Cat. St.

Bri Mus ut 1888 p sate Person andrewer 1888 Ann. Mus Civ Genova (2) vi-p 501 pl v hg 3 (Bharna and Kashiyen Hills Genoa) p 501 pl v hg 3 (Bharna and Kashiyen Hills Genoa) y voi pt v ng 3 (Bhama and Rabhyert Billia Central).

Arthrepholus andrews. Boulenger V R I 1800 p 446 and
Cat Sa. Bet Mus til 1896 p 444 and 3 Flombey N H. S.

Try, 1903, p 23.

Amblycophalus tandaporeus Bourret 1935 Bull. Gen. Instr Pub. Hann x. p. 11 (Tam duo Tong Kerg. Paruti and Ferp Indo-chme i 1338 p. 411-22 chime, i 1936 p 431 (not seen by tre)

Differs from methodorff in having the body more com pressed the median 3 to 7 dorsal scale rows keeled and in the character of the hemipenis This extends to the 10th candal plate and is forked at the junction of the proximal one-third and dutal two thirds It can be divided into four areas namely a small one near the tip composed of longitudinal folds an area of small uniform calvees an area in which the calyces become more papillose in character and a proximal area near the bifurcation in which there are large smooth longitudinal folds \ d 148-166 Q 154 165 C 3 40-63 Q 39-45

Colour and size as in margaritophorus Range Burms (Hitmgnan lat 26° 36° long 97° 52° Mogok Kyaphym Shwali Man Kalaw Marjaban) Bengal [Corps. dhars Darreeling dist) Upper Lace Tong King

74 Parens monticola

Dipute monitoris Cantor 1839 P Z S p 83, (Nama Hills Assett) Wall, J Bombey h H 8 aves, 1908 p 354, and xix, 1908 pp. 356 and 843 and xxx, 1925 p 245 and Rec Ind. Mys xxiv)923, p 21 Bourst Seep Indochine 14 1936 p 425 (m part).

Eye large its diameter greater than its distance from the month internasals about half as long as the prefrontals the latter touching the eye frontal longer than its distance from the end of the smoutt shorter than the parietals loreal in broad contact with the eye no precoular a subocular touching the loreal and separating the anterior labrals from PAREAS, 119

the eye, sometimes touching the postocular; 2 postoculars, the lower elongated and extending below the eye; temporals 2+2 or 2+3; 6 or 7 supralabials, last longest, 3rd and 4th, or 4th only, touching the eye, rarely excluded by the suboculars. Scales smooth, the vertebral series enlarged. V. 3 180-196, \$\times 177-195\$; C. 3 79-87, \$\times 69-80\$.

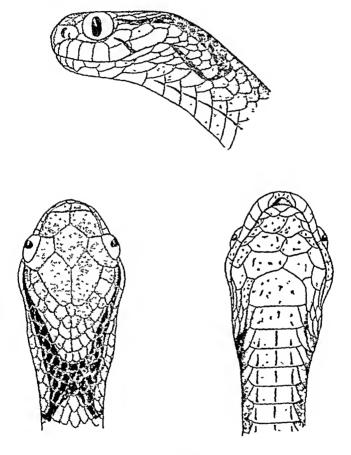


Fig. 37 .- Pareas monticola.

Hemipenis extending to the 15th caudal plate, deeply forked; except for a small area near the bifurcation the organ is calyculate, the calyces being small, increasing slightly in size as they near the bifurcation and having slightly scalloped edges; for a short distance at the proximal end of the calyculate area the calyces are replaced by folds.

Brown above with vertical blackish bars on the aides, or extending across the back, a black line from above the eye to the nape, and another from behind the eye to the angle of the mouth, top of head more or less thickly spotted with black yellowish below, dotted with brown

Total length & 500, tail 130 , Q 730, tail 150 mm

Range Eastern Himalayas (Sikkim, Darjeeling district); Assam (Japur, Naga and Khasi Hells, Sadiya Frontier Tract) Annandale (1912) records that it is common in the Abor Foot-hills

75 Pareas hamptoni

Ambiyeephalus kampione Boulenger, 1905, J. Rombay N. H. S. XVI. p 216 pl — (Morok, Burma, London), Parker, Ann sim, Nat Hart (9) zv. 1975 p 305, Well, Rec. Ind Mus xeiv, 1922 p 26, and J Benbay N H 8 xxx, 1925, p 245 ~ Power Ampions Smith Ann, Mag Nat Hart (10) vi, 1930, p 681, 236 pl - (Mogok, Burma , London) , Parker, Ann Mag and Rec Ind. Mus zhi 1940 p 480 map

Eberhardtin tonkinensis Angel 1920 Bull Mus Hist Nat Paris. 22vi, p. 201 figs. 1-3 (Laoksy Tong King, Paris), and ibid. (2) i 1929 p. 50 — Amblyophalus toniumenss, Bourret Borp Indochine ii. 1926 p. 428 fig. Pope, Rept China. 1933 p. 324 s.

Amblyophalus commanus haunanus Broth, 1923 J Nat Hist Boc. Esam vi, p 204 (Haman . London) Amblyceptalus comnatus berdmores Smith Bull Raff Mus No 2.

1930, p 88 (in part)

Snout abort, eye large, its diameter much greater than ita distance from the mouth, internasals about half as long as the prefrontals the latter touching the eye , frontal longer than its distance from the end of the snont, shorter than the parietal, lorest as high as long, or higher, I pre- and I postocular, separated from one another by a long crescents subocular, or the last two united, temporals 2+2 or 2+3, 7 or 8 supralabiah, 4th or 5th below the middle of the eye Scales smooth or the median scries feehly keeled, vertebral acales (1 or 3 rows) feehly enlarged V & 191-196, 2 180-194, C 493-98, 273-87

Hemipenis short, extending to the 9th caudal plate, deeply forked, cal) culate throughout, the calycea being very large and more or less uniform in size

Coloration and length as in montecola

Range Upper Burma (Mogok , Pangnamdim and Paira Ga, north of the Triangle *), N.E. Siam (near Pak Lai, lat 18. Upper Mekong), Tong Kmg, Haman (Five Finger Mt), Annam (as far south as Kontum, lat 18° 25')

The Triangle is the country between the Nima Kha and Mali Kha Rivers as far north as lat 27°, south of lat 25° they combine to form the Irrawaid. For a map of this zero, see Smith, 1940

76. Pareas carinatus.

Amblycephalus carinatus Boie, 1828, Isis, p. 1035 (Java); Boulenger, Cat. Sn. Brit. Mus. iii, 1896, p. 445; Smith, J. Nat. Hist. Soc. Siam, ii, 1916, p. 163; Wall, Rec. Ind. Mus. xxiv, 1922, p. 25, and J. Bombay N. H. S. xxx, 1925, p. 246; Bourret, Serp. Indochine, ii, 1936, p. 435, fig. head.—Pareas carinatus, Cochran, Proc. U.S. Nat. Mus. kxvii (ii), 1930, p. 37.

Pareas berdmorii Theobald, 1868. Cat. Rept. Asiat. Soc. Mus.

p. 63 (Tenasserim; Calcutta).—Amblycephalus carinatus berd-morei, Smith, Bull. Raff. Mus. No. 3, 1930, p. 88 (in part). Amblycephalus carinatus unicolor Bourret, 1934, Bull. Gen. Instr. Pub. Hanoi (4), p. 15, fig. head (Kompong Speu, Cambodia; Paris), and Serp. Indochine, 1936, p. 437.

Snout short; eye large, its diameter greater than its distance from the mouth; internasals shorter than the pre-frontals, the latter not or just touching the eye; frontal longer than its distance from the end of the snout, as long as or longer than the parietals; I pre- and I postocular; 2 to 4 suboculars, excluding the eye from the labials; temporals 2+3 or 3+3; 7 to 9 supralabials, last longest, 4th and 5th, or 4th, 5th and 6th below the eye. Scales feebly keeled, in females only the median series; vertebrals enlarged. V. 170-184; C. 60-88.

Hemipenis as in monticola.

Coloration and length as in monticola. Bourret records a specimen which is of a uniform reddish-brown colour (var. unicolor). I have examined a specimen, almost uniform in colour, from Me Wang, N. Siam.

Range. The Indo-Chinese Region south of lat. 19°; the

Malay Peninsula and Archipelago.

The types of P. berdmorei are three in number, two adults and a juvenile. Theobald, in 1868, referred the juvenile to macularius and his determination has been generally accepted. After carefully examining it, however, I am unable to agree with his opinion, and refer all three specimens to the same species.

Genus HAPLOPELTURA.

Aplopeltura Dum. & Bibr., 1853, Mem. Ac. Sc., Paris, xxiii, p. 463 (type Amblycephalus boa Boie), and Erp. Gen. vii, 1854, p. 444 .-Haplopeltura, Boulenger, Cat. Sn. Brit. Mus. iii, 1898, p. 439.

Maxillary bone short, thin, expanded vertically, with 5 subequal teeth preceded by an edentulous space; mandibular teeth gradually decreasing in length. Head distinct from neck; eye large, with vertical pupil. Body compressed; tail Scales smooth, in 13 rows, the vertebral scales enlarged; ventrals rounded: subcaudals single.

122

The skull is remarkable for the wide vacuity which occurs between the parietal, frontal and aphenoid bones, a character found also in Psammophis

A single anecua

77 Haplopeltura boa

Amblycepholus bon Born, 1823, Isus p. 1034 (Java), Gunther, Rept. Ren. Ind. 1884 p. 325—Haplopeliura bon, Boulenger, Cat. Sn. Bert. Mus. nr. 4898 p. 439 and Rept. Malay Pan. 1912, p 208 De Root Rept Indo Austral Arch. u, 1917, p 274, 5g., Smith Bull Baffer Mas, No 2 1930, p 85

Snout short, its length equal to or a little shorter than the diameter of the eye, nostril in the nessl, rostral much higher than broad, internasals about half as long as the prefrontals, frontal much longer than broad, longer than its distance from the end of the snort, longer than the parietals, the latter sometimes broken up and succeeded by a senes of occipital shields . 2 superposed for als ; eye surrounded by a series of 7 or 8 shields exclusive of the aupraceular, temporals 2+2 or 3+3, 8 to 10 supralabials, 3 or 4 pairs of large genials, the anterior pair sometimes fused to, or preceded by, an azygous shield, first 2 or 3 pairs of intralabials in contact with each other behind the mental Boales smooth, the vertebral series much enlarged V 166-175, C 106-122, A. I. (Variation in aix specimens from the Asiativ Mainland)

Hemipenis extending to about the 15th caudal plate, deeply forked , throughout its entire length the organ is beset with fine transferse folds, three are close together at the distal end and become gradually further spart from one another as they approach the bifurcation , the sulcus lips are

very promunent and are involved in the folds

Yellowish, greyish, or pale brown above, yellowish or brownish benesth, industrictly mottled and spotted with brown or dark grey, upper hp light yellow, 3 more or less distinct dark streaks radiating from the eye, one on the snont, one below the eye and one on the temporal region

A specimen obtained in the Nakon Sritamarat bits , P. Siam, was coloured in life as follows -Pale grey with narrow black cross bare or almost complete bands , top of head and vertebral scales red, the former speckled with black

I have examined a female containing 4 eggs

Total length o 730, tail 260, Q 835, tail 265 mm

Range A Malayan species that just enters the Indo Chinese Subregion Its habits are arboreal. Two specimens in my collection were obtained in heavy jungle at Chumpon, just north of the Isthmus of Kra I do not know of any other records of this saske from the Indo Chinese region.

Subfamily XENODERMINÆ.

Xenoderminæ, Cope, Ann. Rep. Nat. Mus. 1898, 1900, p. 731; Werner, Mitt. Naturhist. Mus. Hamburg, xxvi, 1909, p. 206; Smith, Ann. Mag. Nat. Hist. (11) iii, 1939, p. 393.

A supraorbital bone; vertebræ with strong lateral expansions to the zygapophyses (except in Achalinus and Fimbrios); scales completely or almost completely attached to the cutis, more or less separated from one another by naked skin. Head with shields or granular scales; labials with more or less distinctly everted margins; nostril in a large, expanded, concave shield.

Range. Indo-China and the Malay Archipelago; Central America.

Key to the Genera.

Key to the Genera.	
I. Head very distinct from neck. No frontal or parietal shields, the whole head, except the snout, covered with small granular scales; back with 3 series of large tubercles. Frontal and parietal scales present, more or less entire; no enlarged tubercles on the back.	Xenodermus, p. 123. Stoliczkaia, p. 125.
II. Head not or scarcely distinct from neck, completely shielded. Scales in 21 to 27 rows; labials without strongly everted edges	ACHALINUS, p. 126. FIMBRIOS, p. 128.

Genus XENODERMUS.

Xenodermus Reinhardt, 1836, Overs. Viden. Selsk. Forh. p. 6 (type javanicus); Boulenger, Cat. Sn. Brit. Mus. i, 1893, p. 175; Smith, Ann. Mag. Nat. Hist. (11) iii, 1939, p. 393.
Gonionotus Gray, 1846, in Stoke's Discov. in Australia, i, p. 502 (type plumbeus).

Maxillary teeth equal, about 15 on each side; head distinct from neck; eye moderate, with vertically elliptic pupil; nostril in a large concave nasal; internasals and prefrontals present, the rest of the head covered with small granular, keeled scales. Body slender, feebly compressed, with very small elliptical, keeled scales, and three longitudinal series of enlarged tubercles, a vertebral and two dorso-lateral; ventrals well developed; tail long; subcaudals single. Vertebræ with expanded spinous process * and strong lateral expansions to the zygapophyses.

A single species.

Range. The Malayan Region.

^{*} Found also in the South American Xenopholis.

78 Xenodermus javanicus

Xenodermus paranicus Reinhardt Le s., and K. Durake Vidensk. Schi, Skrit x 1841 p. 237 pl. n. fice. 1-8 (Java); Bouleuper, l c s. De Roon Rept Indo-Austral, Arch n. 1917, p 44. figs Smith, Bult. Raffee Mus. ho 3 1930 p. 40, Kopston, Bull Raffice Mos to 14 1939, p 165 pl 25

(contonotus plumieus Grav Le s (type loe unknown : London).

internasals narrow extending backwards above the nasal; prefrontals separated from one another by granules, rest of head covered with very small, juxtaposed, keeled scales; a series of small but distract supra and infralabials, their posterior edges everted first pair of infralabials narrow, in contact with one another behind the mental, a pair of elongated genials Sites of body with very small, elliptical, keeled scales more or less separated from one another by naked skin dorsum between the lateral tubercles, with very





Fig. 35—Scalating of Emodernia promises at mid-body A Dored B Lateral vars

small, juxtaposed, keeled scales, three series of enlarged, keeled tubercles extending the whole length of the body and tail, namely, a vertebral composed of three juxtaposed rows. and two dorso lateral angle rows 3. 6171-177, C. 147-165. V Q 176-186, C 133-150 (Kopstein) , A. I

Dark brown or blacksh above, greyer on the sides and below.

Total length of 670, tail 250 , Q 645, tail 245 mm

Easy: The Malayan Region. Robinson & Kloss obtained

Completion of the Completion of t a specimen at Victoria Point, S Tenasserim, it is a female; V 170, C 103, the extreme tip of the tail being missing

Kopetern records a large series found in mxl Java at between 500 and 1100 metres abittude He states that it is a nocturnal snake, living in loose and wet earth beneath the surface of the ground. It frequents mostly cultivated fields, and feeds on frogs. Its movements are very slow. From 2 to 4 eggs are laid at a time.

The Malayan specimens and the one from Tenasserim were caught at sea-level near the coast.

Genus STOLICZKAIA.

Stoliczkaia Jerdon, 1870, Proc. Asiat. Soc. Bengal, p. 81 (type khasiensis); Boulenger, F. B. I. 1890, p. 354, and Cat. Sn. Brit. Mus. i, 1893, p. 175; Smith, Ann. Mag. Nat. Hist. (11) iii, 1939, p. 393.

Teeth small, subequal, 16 to 20 in each maxilla; head very distinct from neck, with large shields, the shields entire

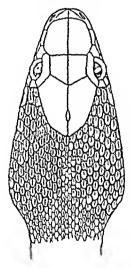


Fig. 39.—Stoliczkaia khasiensis.

or separated by small scales; posterior one-third of head and temporal regions covered with small scales like those of the body; nostril in a large concave nasal; eye large with vertically subelliptic pupil. Body slender, compressed; scales small, elliptical, keeled, juxtaposed or separated from one another by naked skin, in 29 to 31 rows; ventrals large; tail long and slender, subcaudals single. Vertebræ with much elongated spinous processes and strong lateral expansions to the zygapophyses.

Range. Assam and Borneo.

Two species.

79 Stoliczkaja khasiensis

Sidirzkaia khanemes Jerd n 1870 I A S Bengal, p 31 [Khasi Hills Loulon] Boulerger F B I 1890 p 255 fg., and Cat Sa. B t Was i 1891 p 176 Annandale J A S Bengal, 1904 p 209 pl ur figs * 2a b Wall J Bombey N H.S. xxxx 1913 p 598

Rostral small not visible from above internasals small subtriangular prefrontals very large frontal broader than long about 4 times as broad as the supraoculars half as long as the parietals partially or completely divided by a longi tudinal suture a small loreal 1 large pre and 2 post oculars 8 supralab als 4th and 5th touching the eye last very long anterior genisis partly a parated from the infralabials by small scales no posterior gentals Dornal acales separated from one another by naked skin laterals larger and juxtaposed V 208-210 C 115-115 A I

Purplush brown above ventrals and three outer scale rowa

white with brown bases

Total length 670 tail 190 mm Range The type specimen is from the Khasi Hills Annandale records a second specimen from Assam without exact data of locality

Genus ACHALINUS

Achalinus Peters 1889 Mon Akad. Borhn, p 436 (type spinolis) Boulerger Cat So. Brt Mus ; 1893 p 308 Pope Rept China, 1935 p 180 Smith, Ann Mag at Hat (11) i., 1939 Ophistope Sauvage 1677 Bull Son, Phil Parm (7) 1 108 (type

braconnson)

Maxillary teeth 20 to 30 small equal mandibular teeth equal head not or scarcely distinct from neck eye moderate with vertically subelliptic pupil mostril in the anterior part of a large concave mass! or the shield partially divided by a vertical suture no preocular the loreal extending from the nesal to the eye postoculars not distinct from anterior temporals Body slender cylindrical scales in 21 to 27 rows keeled ventrals large rounded tail moderate sub-

Range Japan China Tong King Three or four species one of which inhabits Indo China

80 Achalinus rufescens

Achal and reflectes Boulengor 1888 Ann Mar Nat Hust. (5) p. 43 (Riong kong London). Pope Rept China, 1935 p. 181 Achal Bourst Serp Induchus 1936 g. 135 p. 135 fl. Achal Bourst Serp Induchus 1935 g. 135 fl. Achal Bourst Serp Induced Physics 1935 g. 135 fl. p. 250 (Kam kan S K'amar London). Park Hast Soo Sam vi.

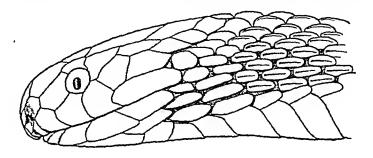
p 200 (Nam kao S Maman London)

Stoliczkaia kwangsiensis Fan, 1931, Bull. Dept. Biol. Col. Sci. Sun Yat Sen Univ. (11) p. 44, fig. (Lohsiang, Kwangsi); Pope, Rept. China, 1935, p. 181.

Achalinus niger Bourret, 1935, Bull. Gen. Instr. Pub. Hanoi, viii, p. 3, and Serp. Indochine, 1936, p. 139 (Tam-dao, Tong-King; Paris); and Achalinus ater, ibid. Dec. 1937, p. 72.

? Achalinus spinalis, and braconnieri Bourret, 1. c. s. pp. 141, 142.

Rostral small, as broad as high, just visible from above; suture between the internasals longer than that between the



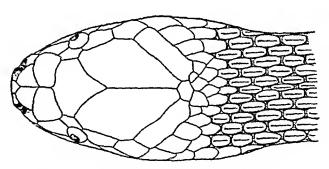


Fig. 40.—Achalinus rufescens. (B.M. 1924.5.22.10.)

prefrontals; frontal as broad as long, broadly truncate in front, shorter than its distance from the end of the snout; loreal large; temporals 2+2, usually only one anterior touching the eye; a large temporal shield bordering the parietal behind; 6 supralabials, 4th and 5th touching the eye, 6th very long; mental very short, just a strip; 3 infralabials in contact with the anterior genials, which are about as long as the posterior; first ventral in contact with the latter; mental and first two upper and lower labials with feebly raised,

everted margins beales strongly keeled, some distinctly tricatinate, in 25 rows V 137-157, C 57-82. A 1.

Hemipenis very long and slender, extending to the 21th caudal plate, forked opposite the 4th; the dutal one-third is calyculate, the calyers being small, of pullorm size, and presenting a sponge like or honeycomb appearance, proximal to this the organ is flounced, the folds being transversely placed and set closely to one another, at the base are much thicker and more widely a parated flounces; extending the whole length of the organ are two prominent folds opposite one another, one of which encloses the sulcus

Reddish brown dark grey above, paler below

Total length 390 tail 75 mm (2)

Range Hainen, Tong King, Southern Chins, Hong Kong

Genus FIMERIOS

Pumbrace Smith, 1929, P Z S p 423 (15 po kloses), and Ann Mast Nat Rist (II) III, 1939, P 593

Maxillar, teeth small 30 to 35, equal, dentary locally attached to the articular Head not distinct from nork , eye small, with rounded or vertically subelliptic pupil, nostill in the anterior part of a large concave nasal, no preocular; lorest very large, extending from the nasal to the eye, rostral, mental and labula with raised, everted edges. Body alender, cylindrical , scales keeled, in 30 to 33 rows , ventrals rounded , tail moderate, subcaudals single A single species

81 Pimbrios kiossi

Findros Hose Smith, 1999 P Z S, p 425, lis (Langtien platest, S Annam, London), Pope, Rept China, 1935, p 181; Bouret Bull Gen, Losir Pub, Hanol, May, 1937, p 28, and Dec 1959, o 23

Rostral separated from the internasals by a horizontal ridge of tassie, supre between the internasals shorter than that between the prefrontals, frontal broader than long, broadly truncate in front, about three times as broad as the supraoculars, shorter than its distance from the end of the mout. 1 pre- and 2 postoculars, the latter scarcely distinct from the temporals, which are 3+3 or 3+4, a subocular, 9 or 10 supralabials, last very long; anterior genials very large covering nearly the whole of the chin in front, in contact with the first ventral, no posterior genials Scales feebly unbricate anteriorly, some of the interstitud akin showing, more strongly imbricate posteriorly V 181-176, C 43-58; A 1

Hemopeous deeply forked, the area distal to the bifurcation

Porechadowing the condition so marked in Prestrice

being spinous, the spines at the extreme tip much the largest; proximal to the bifurcation it is smooth; the sulcus lips are very prominent.

Olivaceous to dark grey above, whitish below; the posterior

ventrals and subcaudals edged with darker.

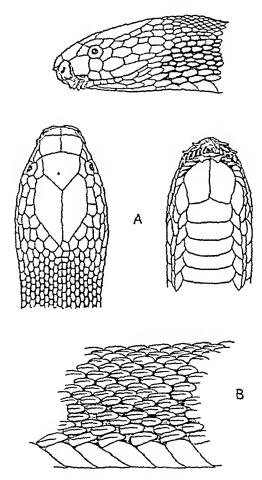


Fig. 41.-Fimbrios klossi.

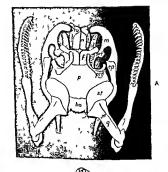
A. Dorsal, lateral and ventral views of head. B. Dorsal scalation.

Total length: 395, tail 50 mm. (2).

Range. S. Annam (Dalat and Camly on the Langbian plateau, Dong Tam-ve, Quang-tri Prov.); Cambodia (Bockor, Elephant Mts.).

Found in the hills at from 3,000 to 5,000 feet. Not uncommon

at Bockor.





be, harmly profit of the profi

Subfamily ACROCHORDINÆ.

Acrochordida Jan, 1863, Elenco, sist. Ofid. p. 106 (in part); Cope. Proc. Acad. Philad. 1864, p. 231.—Acrochordina Boulenger. Cat. Sn. Brit. Mus. i, 1893, p. 172 (in part); Hass, Zool. Jahrb. Jena (Anat.), liv, 1931 (3), p. 378; Smith, Ann. Mag. Nat Hist. (11) iii, 1939, p. 393.

Postorbital bone produced over the supraciliary region; frontal with an expansion on either side in front; prefrontal small, vertically suspended from the end of the expansion, not extending forwards upon the snout. Skin of the body loose, with small scales; no ventral shields. Hypapophyses developed throughout the vertebral column.

A single genus.

Genus ACROCHORDUS.

WART SNAKES.

Acrochordus Hornstedt, 1787, Abh. Acad., Stockholm. viii, p. 307 (type javanicus); Boulenger, Cat. Sn. Brit. Mus. i, 1893, p. 173, de Rooij, Rept. Indo Austral. Archipel. ii. 1917, p. 42; Schmidt.

Zool. Jahrb. Jena, xi (Anat.), 1917, p. 155.

Potamophis (not of Cantor or Fitzinger) Schmidt, 1852, Abh.
Naturw. Hamburg, ii, p. 75 (type javanicus).

Chersydrus Cuvier, 1817, Regne Anim. ii, p. 75 (type fasciatus):
Boulenger, F. B. I. 1890, p. 355 and Cat. l. c. s. p. 173; de Rooij, l. c. s., p. 43.

Maxillary teeth subequal, 12 to 15 on each side; anterior mandibular teeth longest; head not distinct from neck, covered with small, granular scales; nostrils close together, surrounded by a circular nasal shield; eyes on the upper surface of the head, very small, with vertically elliptic pupil; mentum produced forwards and fitting into a deep concavity in the upper jaw; a longitudinal depression in the chin behind the mentum; body stout, covered with loose skin; scales very small, juxtaposed or subimbricate; no ventral shields: tail rather short; feebly compressed; prehensile.

Range. India; Indo-China and the Indo-Australian Archi-

pelago: N. Australia.

Two species.

The presence of a distinct median abdominal fold in Chersydrus granulatus does not seem sufficient to separate it

generically from Acrochordus.

In A. granulatus the columella auris is normal; in A. javanicus it is reduced to a short rod of bone or cartilage attached to the fenestra ovalis but not reaching the quadrate,

Key to the Species.

Nostrils at the end of the snout, pointing mainly forwards; no distinct fold of skin along the

javanicus, p. 132.

pointing mainly upwards: a distinct raphé

along the median line of the belly granulatus. p. 134.

к2

132 82 Aerochordus favanicus

JAVA WART TOAKS ELPPHANT'S TRUNK SNAKE

terechordus pressieus H rastedt, l. e. s. pl. xu (Java); Schiegd, Abbid Aiaphib 1839 pl. xvu (ekull), Houlenger, Cat. Sn. Brit Mus. 1833 p. 173. Smith, J. Nat. Hist. Soc., Siam. 1, 1914, p 13 photo-Polamophie jorunea, Schmidt, 1852, Abh. Nature Hambur, n. p 18 Aerochordus dubus Shaw, 1802, Gen. Zool m. p 573, pl exex

(type for unknown)

Chresdens granulatus, Wall, J. Bombay N. H. S. xxiii, 1914. E 372

Snout blunt, nostrals pointing almost directly forwards;

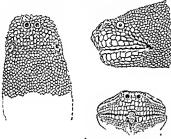


Fig. 43 -- fore hordus parenteus. A Dorsal, lateral and front waves of head B Photograph of a purce of dorsal skin (×9).

eyes on the upper surface of the head, pointing upwards and outwards, head above with very small scales, 18 to 22 on a hne between the eyes, tubercular or spinous on the vertex, larger and flat towards the mouth, a series of small supraand infralabials, 25 to 30 in number, 130 to 150 scales round the bod), the scales juxtsposed, broader than long, trifid, the median spine the longest, no fold of skin along the middle of the belly, except sometimes anteriorly, the scales on the mid line are narrower and have longer spines than those adjacent to them,

Hemipenis forked for more than half its length: the distal end as far as the bifurcation is strongly spinous, the spines involving the lips of the sulcus: proximal to the bifurcation there are smooth longitudinal folds.

Brown or olive-brown above, paler below, flanks with large rounded or elongated spots. Young individuals are usually

spotted all over above.



B

Total length: of 1150, tail 250; \$\times\$ 1835, tail 320, girth 275 mm.

Range. Siam; Cambodia; Cochin China; the Malay

Peninsula and Archipelago; Queensland.

The Elephant's Trunk Snake, as it is called by the Siamese, is not uncommon in the vicinity of Bangkok, inhabiting the river and the canals which abound there. On land it is quite

out of its element and its movements are slow and chimsy. progressing more like a gigantic worm than like a anake It is of an extremely sluggish disposition, and in the day time can hardly be induced to move If handled quietly it makes no attempt to bite but if roughly seized will turn swiftly and with its large teeth can inflict severe wounds feed entirely upon fish. It is a prolific creature producing from 25 to 32 voung at a time

The snake recorded by Wall (1914) is not now available for examination, but it surely refers to this species and not the next one

63 Acrochordus granulatus.

Hylis or groundatus Scharotte. 1209, 1942, Auryl. v., 2-34, (Inda). Cherepting presidents. Robinspray. 2. B. 1 1982, p. 333, fig. and Cat for Brit Mus. 1822 p. 114. Annandas J. A. S. Bergel, 1965, p. 113 and Men. 147 Mus. v. 1918, p. 169, Vall. 1965, p. 13 and Men. 147 Mus. v. 1918, p. 169, Vall. 1984, p. 169, Vall. 1984, p. 174, Parter of Manay. N. H. S. XXX 1918 p. 755, and Sn. Ceylon, 1921, p. 192, Parter of Dombsy N. H. S. XXX, 1919, p. 1924, p. 1874.

Acroel and to fascrattus Shaw, 1802 Gen Cool tile, p 576, pt 180 (type loe unknown)

Cherepirus annulatus Gray 1849, Cat Sa Brit Mus p 61 (Sings-

pore & Madres London) Eyes more lateral than in A jaconicus, nostrils on the upper surface of the snout, pointing mainly upwards, scales on the anout a little larger than those on the hind part of the head, an enlarged scale behind each nasal shield, 8 to 11 scales on a line between the eyes, a series of enlarged scales on the lips separated from the border of the mouth by smaller scales, about 100 scales round the middle of the body, juxtaposed or feebly imbricate, with a central tubercle or short keel a fold of skin along the middle of the belly covered with small spinous scales, hinder part of body and tall more

compressed than in A parameters Hempens forked for more than half its length, and longitudmally pleated throughout, the folds on the distal half bearing spines, the sulcus lips are very prominent and are

not spinose

Dark gree or blackish with whitish cross bars or annuli which may become industries in the adult, the dark bands round the body are broader above than below, head dark grev with light spots above Rarely the white colour may predominate, so that the snake appears white with dark

Total length 1000, tail 100 mm Q

Range The coasts of Ceylon, India, and Indo China, as far as Bombay in the West and Cochin China in the East, the Nicobar Is , south through the Indo Australian Archipelago to the north coast of Australia and the Solomon Islands

According to Wall it is fairly abundant round the coasts of India. It is exceedingly common in the Gulf of Siam, inhabiting the seas chiefly in the neighbourhood of estuaries. Large numbers are daily caught by the fishermen in their nets. It feeds upon fish and is of a quiet and inoffensive disposition. Like A. javanicus it is helpless on land. From 6 to 8 young are produced at a time. They average at birth about 220 mm. in length.

Subfamily COLUBRINÆ.

Colubring, Cope, Ann. Rep. U.S. Nat. Mus. 1898,—Part II. Croc., Liz. and Snakes of N. Amer. 1900, p. 778; Boulenger, F. B. I. 1890, p. 278, and Cat. Sn. Brit. Mus. i, 1893, p. 177.

Colubrium and Boigine, Pope, Rept. Chins, 1935, p. 78.

Natricinæ, Coronellinæ and Boiginæ, Bourret, Serp. Indo-Chine, 1936, p. 31.

Nostril usually lateral; head covered with large symmetrical shields; ventrals well developed. Teeth solid, or the posterior 2 or 3 grooved; hypapophyses absent or present on the posterior dorsal vertebræ.

Key to the Genera of the Colubrina.

- A. All the teeth solid, not grooved (Aglypha).
 - Hypapophyses absent on the posterior dorsal vertebre, the lower surface of -which is smooth or with a low keel.
 - A. Posterior maxillary teeth longest.
 - Pupil round.
 - Longitudinal series of scales in odd numbers.
- Last 2 or 3 teeth usually larger and separated from the others by a distinct interval; one or more suboculars; scales in 19-33 rows; head distinct from neek
- 20-28 teeth, gradually enlarged and forming a continuous series; scales in 17 (16, 18) or 15 rows; 2 or 3 loreals.......
- 25-30 teeth gradually enlarged, and forming a continuous series; scales in 17 rows, the vertebrals enlarged.....
- 6-16 teeth, the posterior strongly enlarged and compressed; head not or scarcely distinct from neek; rostral large, usually extending well on to the upper surface of the snout (fig. 62); scales smooth, in 13-21 rows
 - Longitudinal series of scales in even numbers.

COLUBER, p. 166.

CORONELLA, p. 193.

PTYAS, p. 158,

XENELAPHIS, p. 176.

Оысовом, р. 195.

2 Pup I vertically all piece 6-10 teeth Scales n 13 or 15 rows Scales n 19 rows snout cune form, with

projecting rostral

B Maxillary teeth subsqual pup! banne

Scales in 19 to 27 rows w hapiral m ta Scales a 15 rows w thrut ap cal pits colour green

Scales n 15 rows with apreal pia colour not green Scales in 13 to 17 rows without apical pits

colour not green

Scales in 13 rows no loves! no interness!s ; no temporals Scales in 19 rows a long pointed name! appropriage covered with small scales

Scales in 13 to 15 rows oblique the vertebrals enlarged entrais and caudals with a suture | kr lateral kerl and a notch on each axis corresponding to the kest

C Some of the an ener max lary tenth enlarged and fang like pupil versa eally ell pic scales in 15 to 19 rows

Maxillary bone strongly arched acales in 17 rarely 15 rows amough or feebly heeled ; subraudala pa red

Maxillary bone not erched scales in 17 rows the median feebly keeled subcaudals paired Yax liary bone strongly arched acales in 19

rows strongly keried; subcaudals single

If Hypapophysis developed throughout the vertebral column, represented on the posterior dorsal vectors by a more or less developed crest or tuberels projecting below the centrum A. Dentary bone attached loosely to the

apex of the art cular and freely movable on at 30 to 60 teeth, equal III SIRE Scales smooth, in 17 rows

B Destary bone not or but alightly

movable on the arteular; usually less than 30 teeth. 1 Posterior maxillary tooth fougast

a 2 internantis pup i round. Marillary teeth 18 to 33; scales in 15 to 19

Marillary teeth 20 to 28 the last two absuptly enlarged scales m 19 rows disposed

abliquely extensory Maxillary touth 11 to 18 followed by a peur of very large lange scales in 25 to 27 rows

Zapers p 183

DETOCALANCE P 27°

LTTORETECEUS p 187

ELAPRE P 139

OPPEODETS P ITT COTTA, p 187

Ligrarus, p 181

CALABARIA P 238

REFERENCES P 182.

AMERICAL P. 239

LYCODON p *35

D₂₀000 т р 269

CERCASPIS, p 267

Высколина, р 276

VATRIE, p 281 Ip 311

PERUDOXENODOR

[P 316 MACROPISTRODOS

b. 2 internasals: pupil vertical. Maxillary toeth 35, the last three much larger than the others c. 1 internasal. Nostril directed upwards and outwards; scales in 19 rows 2. Maxillary teeth equal, 20 to 25; head distinct from neck. Nostril in the nasal; scales in 19 rows, strongly	[p. 316. Pararhabdophis, Atretium. p. 319.
3. Maxillary teeth subequal; head not distinct from neck; scales in 13 to 19 rows. a. Nostril directed forwards and outwards.	XENOCHROPHIS, p. 317.
18 to 20 teeth; head shields normal or pre- frontal single; scales in 13 to 15 rows 20 to 24 teeth; internasal single; no loreal;	Ткаснівсніши, р. 321.
20 to 24 teeth; internasal single; no loreal; scales in 15 to 17 rows	Aspidura, p. 334.
20 to 22 teeth; no loreal or preocular; scales in 13 rows 28 to 30 teeth; no preocular; anterior genials	Вічтніл, р. 338.
very large; scales in 13 to 15 rows	XYLOPHIS, p. 341.
10 to 12 teeth; internasal single; no loreal: scales in 17 rows	Haplocercus, p. 340.
Nostril lateral, between two nasals, or between them and the first labial; body not elongate; scales in 15 rows Nostril in the nasal, valvular, crescentic;	[p. 324, Plagiopholis,
body elongate; scales in 17 rows	RHABDOPS, p. 327.
Nostril in the nasal, directed upwards and outwards; prefrontal very broad, usually single; scales in 15-19 rows	[p. 330. Opistnotropis,
 B. Last 2 or 3 maxillary teeth grooved; hypapophyses present or absent on the posterior dorsal vertebre (Opisthoglypha). A. Pupil round. 	
Solid maxillary teeth 20 to 24, subequal; scales in 19 rows, ventrals rounded Solid maxillary teeth 18 to 20, subequal; scales in 17 rows; ventrals and caudals	Balanophis, p. 310.
with a suture-like lateral keel, and a notch on each side corresponding to the keel Maxillary teeth 10 to 13, one or two in the middle enlarged and fang-like; scales in	CHRYSOPELEA, p. 250.
17 rows	Рѕамморнія, р. 361.
scales more or less oblique, vertebrals enlarged, in 19 to 29 rows	Boiga, p. 344.
in 23 rows	TAREOPHIS, p. 360. [p. 368. PSAMMODYNASTES,
C. Pupil horizontal. Scales oblique, in 15 rows	DRYOPHIS, p. 370.

To arrange the many genera enumerated in serial order is not possible Elaphe and its allies, the Colubrine or Coro nellins branch of the Colubrate, in having a simpler type of dentition and no hypapophyses on the posterior dorsal vertebre are less specialized than are the members of the Natricine branch and are placed first. On the other hand, sa shown by their virity of form and coloration, and the multiplicity of their races they are just as highly advanced, if not more so They are very distinctly on the appraile

I arrange the genera in its groups. The members of each one are related to one another, but not necessarily to those of any other group. The arrangement for many of the genera is tentative and further rewarch will no doubt modify what

is expressed here

1 Llaphe Plyne Coluber, Znorys, Opherdrys, Liopelise, Contus Xenelaj his, Lytorhynchus, Phynchophis - The Old World species of Coluber inhabit S.W. Asia, Europe and North Africa Although certain differences in dentition and m the number of scales round the body distinguish them as a whole from their North American relatives, there are too many exceptions to separate them generically. Physics closely related to the American apecies of Coluber, to the Malayan Conyophie, and also to Zoocus with which it connects through P mucosus Together with Elaphe, they form a fauly well-defined group Ophrodrys, Lupelius and Contia are presumably derived from them Lytorhynchus is closely related to the American Phyllorhynchus as perhaps also is Rhynchor has

2 Coronella, Olygodon, Calamaria - Coronella is closely related to the American Lampropellis

- 3 Ahatulla, Chrysopelia -Their nearest relatives are the Ethiopian Chlorophis and Philophthalmus and the Malayan Dryophiopa
 - 4 Lyrolon, Dinodon, Cereaspie, Dryocalamus The first three genera are closely related to one another and to the African Bordon, Lycophidion and Simocephalus Through the Malayan Lepturophis and the Indo Australian Sugonotus they connect with Dryocalamus

5 Esbynophie has no near relatives

6 Natra, Pseudozenodon, Macropusthodon, Balanophia, Parathatedophie, Airclinm, Xenochrophie - Natrix is the least specialized and most widely distributed . Its range is cosmo-Pseudozenodon, Macropiethodon, Balanophis and Pararhabdophie have been derived from it, and together they form a closely related group Airstum has affinities with the American Helscops and Leodyles

7. Trachischium. Aspidura, Blythia, Xylophis, Haplocerons, Plagiopholis, Rhabdops, Opistholropis.—A degenerate assem-

blage, perhaps derived from the previous group.

8. Psammophis, Psammodynastes .- Psammophis is closely related to the Ethiopian Trimerorhinus, Dromophis, Rhamphiophis and Mimophis. It is an entrant into the Oriental Region from the north-west. Psummodynastes is placed here but has no close connection.

9. Boiga, Tarbophis.—Boiga is widely distributed from Africa, through the Oriental Region to Australia. Tarbonhis

in S.W. Asia and Africa is derived from it.

10. Dryophis is related to the Ethiopian Thelotornis and Dispholidus. Taphrometapon, Psammophis and Dryophis agree with one another in having a wide vacuity in front of the brainease between the frontal and sphenoid bones, a condition, as pointed out by Boulenger (Cat. III. pp. 152 and 185), which approaches that of the Lacertilia. The strongly forked condition of the ectopterygoid, seen in Thelotornis and Dispholidus, is foreshadowed in that of Dryophis (fig. 118) and some species of Boiga and Tarbophis (figs. 111 & 113). It probably has no phylogenetic significance.

Genus ELAPHE.

Gonyosoma Wagler, 1828, Icon. Amphib. pl. ix (type viride≈

oxycephala).

Elaphe Fitzinger, 1833, in Wagler's Descr. Icon. Amphib., pt. 3, text to pl. xxvii. (type parreysi = quatuorlineatus); Stojneger, Herpet. Japan, 1907, p. 307; Pope, Rept. China, 1935, p. 227. Callopellis Fitzinger, 1834, in Bonaparte's Icon. Faun. Ital. ii,

fol. 38 (type leopardina).

Colognathus Fitzinger, 1843. Syst. Rept. p. 26 (type Coluber radiatus).

Pantherophis Fitzinger, l. c. s. p. 25 (type Coluber guttatus).
Cynophis Gray, 1849, Ann. Mag. Nat. Hist. (2) iv, p. 246 (type bistrigatus = helena).

Alopecophis Gray, l. c. s. p. 247 (type chalybeus=oxycephala).

Plogiodon Duméril, 1853, Mem. Acad. Sci. France, xxiii, p. 447
and Dum. & Bib. 1854, Erp. Gen. vii, p. 169 (type helena). Compsosoma (not of Audinet-Serville, 1835) Duméril, 1853, Mem.

Acad. Sci. France, xxiii, p. 453 (type radiata). Æpidea Hallowell, Pr. Acad. Nat. Sci. Philad. 1860, p. 488 (type robusta = oxycephala).

Phyllophis Gunther, 1864, Rept. Brit. Ind. p. 295 (type carinata). Allophis Peters, 1872, Mon. Akad. Berlin, p. 686 (type nigricaudus= janseni). Spaniopholis Mocquard, 1897, Bull. Mus. Hist. Nat. Paris, iii,

p. 216 (type souliei = carinata).

Radinophis Vogt, 1922, Arch. Natur. Berlin, lxxxviii, A, 10, p. 140 (type melli).

Coluber, Boulenger, F. B. I. 1890, p. 330, and Cat. Sn. Brit. Mus. ii, 1894, p. 24.

The above synonymy refers only to the Asiatic forms.

COLUBRIDA Maxillary teeth 14 to 24", slightly enlarged anteriorly or posteriorly, head more or less elongate, distinct from neck; eye moderate or rather large, with round pupil Body elongate, cylindrical or slightly compressed; scales in 19 to

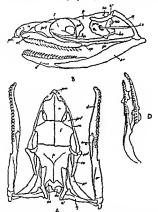


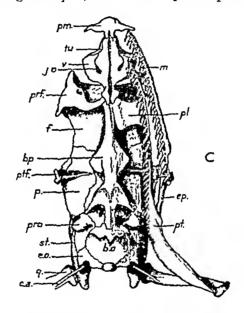
Fig 44. Elaphe radials A Dorest B Lateral, C Ventral view of skull. D Palato maxillary arch (For C, see opposite page) age in a national so, being plate by, basephenoid or columbia arms (or steps) of the plate by the application of the plate by the plate need, P., persetal, per, premarile, prf, prefrontal, proproote, pi pteryrold, pri postfrontal; p, quadrate, supracouplat, M. supratemporal, M., supratemporal, M., supratemporal; M., s

[·] For the specime anchoded in this work.

27 rows, with paired apical pits, smooth or keeled; ventrals rounded or angulate laterally; tail long, subcaudals paired.

Common characters unless otherwise stated:—nostril between two nasals; internasals shorter than the prefrontals; two anterior temporals; five infralabials in contact with the anterior genials, which are as long as or a little longer than the posterior, the latter usually separated from one another by one or more small scales.

The hemipenis is of the same type in all the species mentioned. It can be divided into three areas. Distally, it is calyculate, the cups being scalloped, with soft or spinous points; this is



succeeded by a spinose area, the spines being relatively large and few in number; they are thick and fleshy in appearance, the tip appearing as an uncovered point. The extent of the areas varies with the species; the sulcus is not forked.

Range. Europe; Asia and islands of the East Indies; North America. Some 30 species in Asia.

I cannot find any morphological characters by which to distinguish Gonyosoma Wagler 1828, type viride = oxycephala, from the species usually placed under Elaphe Fitzinger 1833. Gonysoma therefore should stand as the name of the genus. Its limits, however, are not yet clearly defined, and fresh work upon it will probably result in further changes in nomenclature. Rather than add to the confusion, I leave Elaphe for the present as it stands.

prosing D 143

frenate p 144 or replate p 144

rudiala, p. 165 flavolineata p 165 brirna, p 169

moellendorff p 152

porphyrocea p 154

cornate p 154

Key to the Species

I Colour green (except in young frenche and sometimes is argreep) also Scales in 19 rees a forest Scales in 13 rows no lowel

Scales in 23 (2) rows

II Colour not green

A Lorest not very a nail a Last labest below the eve touching

the temporals areles of the uel sadio reg on strongly keeled Scales in 19 rows a black occipital bar

Scales in 19 rows no black occupiest bar Scales in 25 to "9 rows

b Last labest below the eye not tourh

g the temperals I Scales of the suchandic region feelily

keeled. Scales in 23 rows 1 230-230 a black air pr teniura, p 150 along the sole of the head hodymou, p 15° cantores p 152

Scales in 23 rows 1 233 247 no black stripe on the head

Scales in 21 rows \ 213 236 Scales in 27 rows

2 All the scales except the outer 1 or 2 rows strongly keeled ecales m 23 rerely 25 or 21 rows. 5 215-279

3 Scales smooth in 19 rows

B Lorest very small or absent belly with large quadraugular black spots

Scales in 19 rows a 1-shaped mark on the top leanards, p 156 of the head Scales in 21 or *1 rows; head with 3 black

mandomna p 157 erescentie banda The following table of dental and scale counts will also assist in the identification of the meeter

Insignificant as this character may seem I have not yet found it fail it has I believe taxonomic value

84. Elaphe prasina.

GREEN TREE RACER.

Coluber prasinus Blyth, 1854, J. A. S. Bengal, xxiii, p. 291 (Assam : Calcutta); Boulenger, F. B. I. 1890, p. 334, and Cat. Su. Brit. Mus. ii, 1894, p. 59; Annandale, Rec. Ind. Mus. vi. 1911, p. 218; Venning, J. Bombay N. H. S. xx. 1910, p. 337; Wall, ibid. xix, 1909–1910, pp. 346, 825 and xxix, 1923, p. 620 and xxx, 1925, p. 812; Parker, Ann. Mag. Nat. Hist. xv. (9) 1925, p. 301; Rendahl, Ark. Zool. Sven. Vet. Akad. Stockholm, xxix 10 1027, p. 22. Flanks exceins Smith. Bull. Deff. M. xxix, 10, 1937, p. 22.—Elaphe prasina, Smith, Bull. Raffles Mus. No. 3, 1937, p. 22.—Indiano prosina, Santa (1940, p. 480; Pope, Rept. China, 1935, p. 260; Bourret, Serp. Indo-Chine, 1936, p. 208; Shaw and others, J. Darjeeling N. H. S. xiv, 1939, p. 71; Tweedie, Bull. Raffles Mus. No. 16, 1940, p. 85.

Gonyosoma gramineum Günther, 1864, Rept. Brit. Ind. p. 294, pl. xxiii, fig. D (Khasi Hills; Londen).

Posterior maxillary teeth largest. Snout twice as long as the diameter of the eye; internasals nearly as long as the prefrontals; loreal a little longer than high; preocular often touching the frontal; 9 supralabials, 4th to 6th touching the eye; 2 anterior temporals, rarely only I. Scales in 19:19:15 rows, faintly keeled, except the outer two or three rows; smooth in the young; V. 191-209, with a strong lateral keel; anal single or divided; C. 91-111.

Hemipenis extending to the 9th caudal plate; the calyces are deeply scalloped, with spinous points; the spinose area is short and the spines are not fleshy; the proximal plicate

area is long.

Uniform green above in the adult, the interstitial skin with black and white reticulations, the scales sometimes edged with black in the young; upper lip and lower parts greenish-white; ventrals outside the lateral keel usually white.

Total length: 3 900, tail 235; \$ 1110, tail 250 mm.

Range. From the Eastern Himalayas (Darjeeling district) through Assam, Upper Burma and Yunnan to Tong-King

(Col des Nuages) and south to the Malay Peninsula.

In Assam and Burma it ranges as far north as the Mishmi Hills and Sumprabum in the north of The Triangle, and south to Toungyi, S. Shan States. South of lat. 20° it appears to be extremely rare, and its distribution is somewhat remarkable. I obtained two specimens from Ban-na, Tourane, on the coast of Annam (Brit. Mus. Coll.), and specimens have been obtained in the mountains of the Malay Peninsula at between 4,000 and 5,000 feet altitude; there is a specimen in the Indian Museum (No. 7672) from the Andaman Islands. It has been recorded from all the main hill ranges in Assam and Upper Burma, but is nowhere common. Its obliterative coloration and arboreal habits may explain this.

144

85 Elaphe frenata

Herpetodryas Jernama (2012) 1833 Ann Mag Nat Hist (2) 21, p 390 (khasi Hile Lopidon)—Calulor frenatus Boulenger F B I 1830 p 333 and tat 5n Brt Mus i 1834 p 38 Wall J Bombay N H 3 xxx 1923 p 500 Parker Ann Map hat Hat (9) av 1925 p 305 - flaple frenate Pope Rept China 1935 p 248 fig head Bourret Serp Indo-Chine, 1936

p *08 Rhad nophie melli Vogt 1922 Arch Vat Berlin, lxxxviii, A. 10 p 140 (hwantung fror Berlen) Mell fold lxxxxxx, A. 10,

19 2 0 12) Gonyosoma midwelle Schmidt 1925, Amer Mus Not No 157

p 4 (Lenping Sulvent New Lork)

Closely albed to L prassa differing as follows Snout more projecting prefrontals twice as long as the internasals , nasals sometimes united into a single shield 8 or 9 supra labials loreal united with the prefrontal

V 201 235 C 120-145 A 2

Hemipenis as in prasida

Colour as in practice but with a black streak along the side of the head above the labrals

Total length of 1500 tail 463 mm (Col des Nuages Tong King)

Range Assam (Khasi Hills). Tong king (Chapa, Col des Auages), Southern China A much rarer make than the preceding but not uncommon at Chaps according to Bourret

Under the name of mells logt has described from Southern Chins a juvenile which is coloured quite differently from that of the adult. The upper parts are grey with numerous more or less oblique black transverse bars irregular in outline and often broken up Whether this coloration is constant for all juveniles as Pope auggests remains to be shown, it is not impossible however that it represents a that not colour form such as occurs in E orycephale and which is discussed more fully under that name

86 Elaphe oxycephala.

REP TAILED RACER.

Coloir caperphales Box 1837 Java 1931 [Java type lost]

1834 (1939 * F. 19 7 1879 * p. 237 [Java type lost)

1834 (1939 * F. 19 7 1879 * p. 235 ant Cat Sa. Jiva Mus u.

1834 (1932 * p. 235 ant Cat Sa. Jiva Mus u.

1842 p. 1842 (1934 * p. 235 ant Cat Sa. Jiva Mus u.

1842 p. 1844 (1934 * p. 235 ant Cat Sa. Jiva Mus u.

1842 p. 1844 (1934 * p. 235 ant Cat Sa. Jiva Mus u.

1844 (1934 * p. 235 ant Jiva U.)

1844 (1934 * p. 235 ant Jiva U.)

1845 (1934 * p. 235 ant Jiva U.)

1845 (1934 * p. 235 ant Jiva U.)

1845 (1934 * p. 235 ant Jiva U.)

1846 (1934 * p. 235 ant Jiva U.)

1846 (1934 * p. 235 ant Jiva U.)

1846 (1934 * p. 235 ant Jiva U.)

1847 (1934 * p. 235 ant Jiva U.)

1848 (1934 * p. 235 ant Jiva U.)

1848 (1934 * p. 235 ant Jiva U.)

1848 (1934 * p. 235 ant Jiva U.)

1849 (1934 * p. 235 ant Jiva U.)

1840 (1 Convescma conde Wagier 18 8 Icon. Amph. pl. 1x (Brazil)

ELAPHE. 145

Alopecophis chalybous Gray, 1849, Ann. Mag. Nat. Hist. (2) iv, p. 247 ("Mauritius": London).

Epidea robusta Hallowell, 1860, Pr. Acad. Nat. Sci. Philad. p. 488 (Gaspar Straits, Malay Archipelago); Stejneger, Pr. U.S. Nat. Mus. lxix (16), 1926, p. 3 (=oxycephala).

Coluber flowers, 1925, Sitz. Ber. Akad. Wiss. Wien, Abt. I,

exxxiv, p. 55 (Singapore; Vienna).

Coluber janscni clegans Werner, 1926, Sitz, Ber. Wiss, Wien, cxxxv, 1, 7/8, p. 244 (Siam; not seen by me).

Anterior maxillary teeth largest. Snout strongly projecting, nearly three times as long as the eye; loreal 2 to 3 times as long as high; 9, sometimes 10, supralabials, 5th and 6th, or 6th and 7th, touching the eye; anterior genials much



Fig. 45.—Hemipenis of Elaphe oxycephala.

longer and larger—3 or 4 times—than the posterior. strongly compressed; scales in 23, rarely 25: 23, rarely 25: 15 rows, smooth or feebly keeled. V. 236-262, strongly angulate laterally; C. 130-149; A. 2 (for specimens from the Indo-Chinese subregion). Some or all of the vertebrals in the posterior part of the body may be enlarged.

Hemipenis extending to the 21st caudal plate. The calvees are large and thick-walled but not deeply scalloped; spines very large and few in number; they are succeeded proximally by a short area of much smaller and more numerous spines

(fig. 45). VOL. III.

Green above darkest on the head, tail light chestnut or buffish red the two colours meet abruptly at the vent On the anterior half of the body the scales may be edged with black an indistinct blackish stripe along the side of the head immediately above the lahinls, light greenish yellow

Total length & 1880 tail 480, 2 2100 tail 500 mm Range Tennaserim (Amherst district), Siam (Kanburi Raheng district Chieng Sen in the extreme North), Cambodia and Cochin China (fide Tirant) S Annam (Daban), the Andaman and Nicobar Islands the Malay Peninsula and East Indian Islands I do not know of any rehable evidence to show that this snake occurs in Upper Burms or anywhere

north of the localities given here

Under the name of Coluber flowers, Werner has described & distinct colour form This variety is never green but has the head and body above of a light or dark buff marked all over with scattered irregular blotches of dark brown or black the belty is whitish uniform or with dark markings similar to those upon the upper parts the tail which is paler and uniform in colour is abruptly marked off from the body as in the typical form This colour pattern is obviously produced by an extension throughout the body of the colour of the tail of the typical form with the addition of the dark markings It inhabits the Malay Peninsula as far north as Trang

A thoroughly arboreal snake extremely active, and swift in its movements, the few that I have handled never became tame and were always ready to bite at the slightest provocation tecording to Stoliczka it is not uncommon in the forests of the Andaman Islands and is found generally on bushes near

brackish water creeks

87 Elaphe radiata

COPPERHEAD

p o i — Catalynali se reduct se Cocleran 1700 U.S. cast desar 1910 p 6—Ek pl- red est 1900. Rept C mm. 1935 p el 1 fig. head. Bournet Seep In to Ch. no. 1936 p 211 Collader, quadrifaceat se Lantor I S are 1939 p 73 actects in Belli as 1 Linear I 7 S 1837 p 31 (Assam collader). sketch in Besile an L brary)

Tropulonot is gt. que Cantor I e z p 54 (Mergus Tenasserum London col sketch in Bodlesan Labrary)

Posterior maxillary teeth largest Snout twice as long as

the eye; loreal a little longer than high; 9, rarely only 8, supralabials, 4th to 6th touching the eye, 6th in contact with the temporal. Scales in 21 or 19:19:17 rows, more or less distinctly keeled, those of the ischiadic region strongly keeled. V. 222-250, strongly augulate laterally; C. 82-108; A. 1.

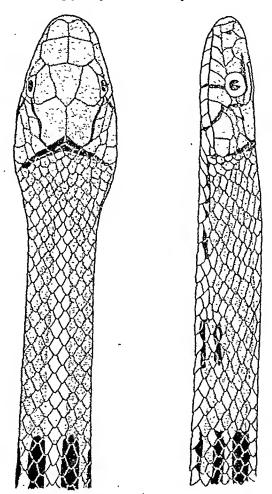


Fig. 46.—Elaphe radiata. (B.M. 94.5.21.1)

Hemipenis extending to the 10th caudal plate; the calyces are deeply scalloped, with blunt spines; the spinose area is extensive and is succeeded proximally by a short one of small stout spines.

Above greyish brown, fawn or yellowish brown, sometimes with a reddish or greenish tinge in life, with four black stripes on the anterior half or two thirds of the body, commencing a short distance behind the neek; the upper pair, on either aide of the vertebral line, are broad, the onter pair on scale rows 3 are much narrower and are usually broken into a series of elongated spots on the anterior part of the body , bordering the ventrals there may or may not be a 3rd senses of still smaller spots, lower parts Jellowish, uniform, or powdered with grey, or almost entirely grey; head copper brown . A black bar across the occuput and three black streaks radiating from below and behind the eye

Total length & 1890, tail 370, Q 1795, tail 350 mm.

(* 2135 mm . Wall)

Range From Oressa (Cuttack) and the Eastern Himalayes (Sikkum) to Southern Chuns, and through the whole of the

Indo-Chinese subregion to the Malay Archipelago

E raduate is not uncommon in Southern Burma, Siam, and French Indo-China, it is found chiefly in the plains, inhahiting the open country and fields, and gardens in the vicinity of villeges It is durnal in its habits and feeds chiefly upon small mammals It possesses in a marked degree the power of expanding, in a vertical direction, the throat and anterior part of the body When cornered, it adopts a menacing attitude throwing the fore part of its body into a series of loops and opening the mouth widely Under these conditions it is extremely handsome, the jet black bars contrasting vividly with the pale fawn of the rest of the body One that I kept never grew accustomed to being handled, and after four months was nearly as wild and firee as on the day it was captured Young ones that I have kept were more gentle and soon became tame

From 5 to 12 eggs are laid at a time.

88 Elaphe flavolineata.

Coluber Revoluteria Schlegel, 1837, Phys. Serp II, p 14, (Java). Stepneger Nyt Mag Naturved Kristiana, 1x, 1922 (2) p 58 Stepneger Nyt Mag Nasurved Kratiana, Ir. 1922 (2) p. 78-79. Coloir medimerus (non Shaw 1902) Schlegel, 1837. Flyn 324, n. p. 141, pl. v. figs (Jova), Boulesger, F. B. I. 1890, p. 3.4. and Cat fa. Brit Hus u. 1894 p. 60. Annandale, A. S. Beugal (ns.) I. 1905 p. 173, Wall, J. Bombay N. H. S. Zhx, 1923, p. 201, Benth, Buff Raffles Mon No. 3, 1930, p. 48-88.

Posterior maxillary teeth largest Snout twice as long as the eye , loreal a little longer than high , 9 supralabials, 4th to 6th touching the eye, 6th in contact with the temporal Scales in 21 or 19-19 17 rows, more or less distinctly keeled, those of the ischiadre region strongly keeled, V 193-234, strongly angulate laterally; C 89-115, A 1

149 ELAPHE.

Hemipenis extending to the 14th caudal plate; the calyculate area occupies more than half the organ; distally the calyces are small and uniform in size; they gradually become larger and more elongate as they approach the spinose area; this latter is relatively short, and the spines are few in number;

they terminate in a series of small spines.

Pale brown anteriorly, with a yellow, black-edged vertebral stripe which becomes gradually more and more indistinct towards the hinder part of the body; this, like the tail, is darker brown or black; a series of black spots on each side of the anterior part of the body, or ocelli with bright yellow centres well marked in the young; a black streak below the eye, an oblique one from the eye to the angle of the mouth, another from the temple to the neck.

Total length: 3 1560, tail 360 mm.

Range. A Malayan species that just reaches the Indo-Chinese region in Tenasserim; it is recorded from the Andaman Islands. Oviparous, the eggs measuring approximately 50 by 20 mm, in size.

The Coluber melanurus of Schlegel, 1837, is antedated by the Coluber melanurus of Shaw, 1802, which is a species of Callophis.

89. Elaphe helena.

TRINKET SNAKE.

Russell, 1796, Ind. Serp. i, p. 37, pl. 32 (Vizagapatam).

Coluber helena Daudin, 1803, Hist. Nat. Rept. vi, p. 277 (based on Russell's plate); Boulenger, F. B. I. 1890, p. 331, and Cat. Sn. Brit. Mus. ii, 1894, p. 36; Wall, J. Bombay N. H. S. xvi, 1905, p. 394, and xix, 1909, p. 757, and xxii, 1913, p. 22, col. pl., and xxvi, 1919, p. 566, and xxix, 1923, p. 622, and Sn. Ceylon, 1921, p. 197, and Spol. Zeyl. xiii, 1924, p. 78, figs.; Fraser, J. Bombay N. H. S. xxxix, 1937, p. 478.—Elaphe helena, Shaw & others, J. Darjeeling N. H. S. xiv, 1939, p. 78.

Cynophis bistrigatus Gray, 1849, Ann. Mag. Nat. Hist. (2) iv.

Cynophis bistrigatus Gray, 1849, Ann. Mag. Nat. Hist. (2) iv,

p. 246 (Ceylon; London). Herpetodryas malabaricus Jerdon, 1854, J. A. S. Bengal, xxii p. 530 (Annamallays; London).

Herpetodryas malabaricus var. carinata Müller, 1878, Verh. Nat. Ges. Basel, vi, p. 671 (Bangalore; Basel).

Anterior maxillary teeth largest. Snout twice as long as the eye; prefrontals twice, or nearly twice, as long as the internasals; loreal a little longer than high; 9 or 10, sometimes 8 or 11, supralabials, 5th and 6th, or 5th to 7th, touching the eye, the 6th or 7th in contact with the temporals. Scales in 23 or 25:25 or 27 (rarely 29):21 or 19 rows, more or less distinctly keeled on the posterior part of the body and tail. V. 217-265, angulate laterally; C. 73-100; A. 1.

Hemipenis extending to the 27th caudal plate; the distal

half of the organ is spinose the spines being relatively small and arranged in longitudinal series, this area changes abruptly into on with very large spines there are from 6 to 8 of them in lateral series the largest ones being on either side of the

suleus (excumen from Madras BM Coll)

light or lark brown above with dark brown or black cross bars containing white occlls them are most conspicuous anteriorly and on the miles more than on the back, this pattern gradually dusappears on the hinder part of the body, which is brown abive with a broad dark strips on each side, a black vertical streak below the eye and an oblique one behind it kwer parts yellowish uniform or with a more or less distinct f storned marking on each side. This marking, according to Wall is confined to specimens from Western India south of Bond av

Two distinct firms of colour pattern can be found on the nick I Two I ngitudinal Hack stripes parallel with one another or converging posteriorly. This is the commonest form and occurs if roughout the whole range of the special II. No black stripes but a white black edded collar interrupted on the mid line Apparently restricted to the Mestero Ghats

Total length 2 13 40 tail 200 2000 tail 200 mm Range Ciylin Teninsular India to Sind in the North West the Himaliyas (Minora listrict Jalpanguri district), Assam

(Naga Hills)

Wall (1913 and 1921) has given good secounts of this well known In lian snake and his colour plate is excellent All those who have had experience of it agree that it is an extremely active creating with a victoria temper. Its main food consists of mammals but lizards frogs and snakes have been recorded as part of its fire. When excited it will assume an attitud of defence similar to that adopted by L reduits As regards its breeding hal its Wall (1924) records finding eggs in June the embryos well advanced in development

90 Elaphe tænfura

STRITTO RACER

Elaplus temurus Cope, 1861 I roe Acad. Nat Sci Philad. 201. [19] L. Remuras Cope, 1861 I roc Aced, Nat Sci Philed, 378. Philed Sci Phi Coluber nuthalli Theobald, 1868, Cat. Rept. Mus. Asiat. Soc. p. 51, and Cat. Rept. Brit. India, 1876, p. 164 (Pegu, Burma; Calcutta);

Sclater, J. A. S. Bengal, Ix, 2, 1891, p. 239 (=tæniurus).

Elaphis yunnanensis Anderson, 1879, Anat. Zool. Res. Yunnan, p. 813 (Tengyueh, Yunnan; Calcutta and London).

Elaphis grabowskyi Fischer, 1885, Arch. Nat. Berlin, p. 59, pl. iv, fig. 3 (Borneo; London).—Elaphic tæniura grabowskyi, Smith, Bull. Raffles Mus. No. 3, 1930, p. 49.

Coluber vaillanti Mocquard, 1905, Bull. Mus. Hist. Nat. Paris, xi,

p. 76 (Cao-bang, Tong-king; Paris).

Coluber tæniurus var. ridleyi Butler, 1899, J. Bombay N. H. S. xii, p. 426 (Batu Caves, Kuala Lumpur, Malay Peninsula); Ridley, 'The Times,' Nov. 10, 1937.

Coluber teniurus pallidus Rendahl, 1937, Ark. Zool. K. Sven. Vet Akad, Stockholm, xxix, A, p. 19 (Sukli, Tenasserim).

Anterior maxillary teeth largest. Snout 2½ times as long as the eye; prefrontals twice or nearly twice as long as the internasals; loreal a little longer than, sometimes nearly twice as long as, high; 7 to 9 supralabials, 2 or 3, sometimes only one, touching the eye: a presubocular usually present. Scales in 23:23:19 rows in 22 examples from the Indo-Chinese region north of lat. 20°; in 25:25:19 rows in examples from Siam and Tenasserim, smooth or feebly keeled. V. 231-263; C. 89-112, north of lat. 20°; V. 276-293; C. 91-103 from Siam, strongly angulate laterally; A. 2. In two examples from Pangnamdim the anterior subcaudals are single.

Pope (1935, p. 272) has shown how erratic and geographically inconsistent the scale-counts of this species can be. Chinese form has usually 25 scales at mid-body, that from the Malay Peninsula always 25 at mid-body*, while further south in the Malay Archipelago it may rise to 27. The great diversity in the ventral counts in specimens from the Indo-

Chinese region alone is shown here.

Hemipenis extending to the 15th caudal plate. The calveulate area occupies nearly half the organ: the spines are short and are enclosed in a voluminous sheath. They are succeeded proximally by an area of longitudinally plicate folds; the transition between each area is abrupt.

Light greyish or brownish above, the head and neek uniform except for a black stripe on each side of the head, broadest behind the eye; anterior part of the back with a vertebral series of large black butterfly-shaped spots, and smaller diamond-shaped ones on the sides, in the young, which in later life break up to form a wide open network; posterior part of back with a pale grey vertebral stripe, 3 or 4 scales wide, and a broad black stripe on each side, 5 or 6 scales wide : this may or may not be interrupted by light spots or transverse bars as far as the vent; lower parts uniform yellowish (spotted

^{*} As far as my own observations go.

with black in spectmens from Upper Burms and S.E. Tibet) , outer margins of the ventrals with black spots, which on the hinder part of the body and tall unite to form a stripe; it is separated by a white stripe from the dark lateral one

Total length of 1600, tail 300 , 9 1980, tail 340 mm Range in the Indo Chinese region . Darjeeling; Burms (Abor country, Rong to Valley north of Rims, Pangnamdim, north of Port Hertz, Chin Hills, Pakkoku district); Tenas-

serim (Sukh) Tong King , Hong Kong , Siam [Muang Fang

m the north, Hinlay in the Dong Rek Mits) The pale form of this make, var ridleys, first described from the Batu Caves of the Malay Penusula, no doubt owes ris lack of coloration to the environment in which it lives. It feeds upon hats

91 Elaphe hedgsont

Reliates hadgeons Quatter 1860, F Z S p 138 pl 27 (North).
Landon)—Column Replacement, F H 1 1800, p 232,
and Cat Sn. Bru Mas 1 1894, p 35, Vall. J Sarahov
N H S xxis, 1923, p 625—Elepha hadgeons, Shaw & others, J
Detrebulg R R S xxis, 1923, p 73 Anterior maxillary teeth largest Snout 21 times as long

as the eye, prefrontals twice or nearly twice as long as the internasals, lores a little longer than high, 8 supralabials, 4th and 5th touching the eye, a presubocular, often united with the 3rd label Scales in 21 or 23 · 23 17 rows, smooth or feebly keeled V 229-247, strongly angulate laterally , C 79-92, A 2 Hemipenis extending to the 13th caudal plate, otherwise as

Ohve-brown above, many of the scales edged with black; yellowish below the outer margins of the ventrals edged with black.

Total length o 1500, tail 310 . C 1250, tail 255 mm Range The Himslayse, from Ladek and Kashmir (Srinagar) to Sikkun . Assam (Caro Hills)

92 Elaphe cantons.

Colubre reticularse from Daudus 1803) Cautor, 1839, P Z S p 51

Conver remarker from Baudan 1802) Canton, 1839, F Zo y --(Cherryang), Amaria, and Jacketch in Boddman Library); Boddman Library); Golder cantonic Boddman 1818, Cat. Sn. Brit Miss in P. 35, Well, 3 Bombay N H S azz, 1809 in pp 184 80% and with RCL, p 621,—Eloyke conserve Blank to them J Darpeton N H, S xiv, 1939, p 74, Emph. Nov. Ind. Mus 311, 1940, p 189.

Anterior maniflary teeth largest Snout 2 to 21 times as long as the eye, lores a little longer than high, 8 supralabrals, 4th and 5th, or 3rd to 5th, touching the eye, a

153ELAPHE.

presubocular usually present. Scales in 19 or 21:21:17 rows, smooth or feebly keeled. V. 213-236, angulate laterally; A. usually single; C. 65-88.

Hemipenis extending to the 17th caudal plate; characters

as in radiata but the calveulate area more extensive.

Anterior half of the body grey, the interstitial skin and margins of the scales white, and with large squarish black spots, the vertebral series usually united to form broad transverse bars; posterior part of body and tail olive-brown to blackish, with irregular light cross-bars (reddish-brown in life) expanding on the vertebral line; lower parts yellowish, pink on the tail, spotted with brown or black or nearly entirely dark brown or black; head above uniform brown or greyish. The colour pattern is very distinct in the young and halfgrown, but may disappear almost entirely in old individuals.

Total length: 3 1960, tail 335 mm. (not quite complete). Range. The Eastern Himalayas (Sikkim; Darjeeling district); Assam (Garo and Khasi Hills); Upper Burma

(Pangnamdim, north of the Triangle).

Common, according to Wall, in the neighbourhood of Darjeeling above 5,000 feet altitude.

93. Elaphe moellendorff.

Cynophis maellendorffi Boettger, 1886, Zool. Anz. Jena, xi. p. 520 (Kwangtung Prov., China; Frankfurt).—Coluber mællendorffi, Boulenger, Cat. Sn. Brit. Mus., ii, 1894, p. 56.—Elaphe mællendorffi, Bort. Bott. China 1895, p. 56.—Elaphe mællendorffi, Bort. Bott. China 1895. dorffi, Pope, Rept. China, 1935, p. 250, pl. x; Bourret, Serp. Indo-Chine, 1936, p. 202.

Elaphe moellendorffi tonkinensis Bourret, 1934, Bull. Gen. Instr. Pub., Hanoi, April, p. 11, and Serp. Indo-Chine, 1936, p. 203

(Tong-King; Paris).

Snout three times as long as the eye; prefrontals twice as long as the internasals; loreal twice as long as high; 9 or 10 supralabials, 5th and 6th touching the eye; a presubocular present or absent. Scales in 27:27 or 31:23 rows, more or less distinctly keeled. V. 268-274, strongly angulate laterally;

C. 97-99; A. 2.

"The hemipenis is spinous proximally, calyculate distally, the calyculate area somewhat the more extensive and set off abruptly from the spinous section; the spines are numerous and uniform in size, but the calyces become much smaller towards the end of the organ; their edges are scalloped; distally the sulcus lies deep in a distinctly raised calyculate ridge, while a second longitudinal ridge parallels the one in which the sulcus is imbedded, but is evident only along the distal third of the organ" (Pope, 1935.).

Greyish above with a dorsal series of large dark grey, black-edged hexagonal or squarish spots, 28 to 32 in number, and a lateral series of alternating smaller ones; yellowish below largely chequered with black tail with more or less complete whitish ann th (? pink in life) head uniform grey above

Total length 3 1600 tail 595 mm

Range Tong hing (Car him*) bouthern Chins

Bourret a tonkinensis is based on two specimens which have 31 scale rows at mid body Their exact provenance in Tong King is not known and he remarks of them (p 204) de ne sais sai sagit d'une rariété locale The specimen from Car him said to be from Tong hing in the British Museum and two others in Paris from Tong King have only 27 scale rows at nn I body

94 Elaphe carinata

I hyttophia cormus & miher 1864 Rept Brit Ind. p 298 pl. szi (China London) Elopha carnesta Pope Hept China, 1923, p 93) of savu B and text fig

Hapke commute orn tophage Bourset 1935 Seep Indo-China p o) he locat Chapa, Tong King not sees by ma)
Col der pt yllophia Boulenger 1891 Ann. Mag at Hat (6) via

p 210 (Ch na London) and Cat Sn. Brit Mus : 1894 p 53 Bo tret records a specimen of this make known previously from Yuman and China from Chapa Teng King It differs from the typ cal form in having a scale formula of 25 25 19 V 23 C 95 and slightly in coloration

95 Elaphe porphyracea

Couche perphysicals Cantor 1839 P Z S p 51 (Mishmi Hills, More to 11ty of abeth in Bodiesan Library); Gamber Reji More to 11ty of abeth in Bodiesan Library); Gamber Reji More Cat San Held Mark y 30 and mx 1809 10 pp 345 827 and xxx, 1933 p c vs to the property of the pro

EUY 1939 p 72 Elayle porthyracia porthyracea Smith, Rec Ind Min xl 1, 1940

p 48)
Grandia collectivatus Grey 1833 Ann. Mag Nat Hat (2) xii
p 309 (Shaa Hills Louden)
A 1975 (Shaa Hills Louden)
A 1975 (Shaa Parker)
A 1975 (Shaa Parker

ELAPHE. 155

Elaphe porphyracea hainana Mell, 1929, Lingnan Sci Journ. viii, p. 209 (Hainan).

Elaphe porphyracea longilineata Bourret, 1934, Bull Gen. Instr. Pub., Hanor, Dec. p. 6, and Serp. Indo-Chine, 1936, p. 191 (Tong-King: Paris).

Anterior maxillary teeth largest Snout 21 times as long

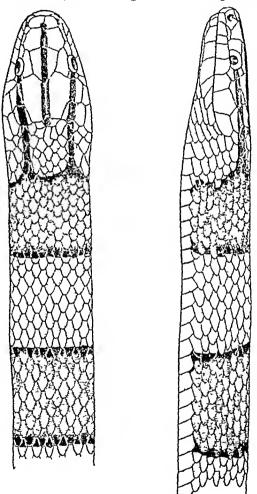


Fig 47.-Elaphe porphyracea

as the eye; loreal a little longer than high; 8 supralabials, 4th and 5th touching the eye. Scales in 19:19:17 or 15 rows, smooth V. 190-218, not angulate laterally; C 52-76: A. 2.

Hemipenis to the 8th candal plate It is spinose throughout, the spines gradually increasing in size as they approach the base of the organ at the extreme base there are a few very large ones extending the whole length of the organ on either side of the sulcus are two prominent folds, they are covered with spines and terminate at the tip in a partly free end which les in a small recess or pocket. This description of the hemipenis drawn up from a Burmese example forma typica differs considerably from that given by Pope taken from a Chinese specimen (p signofasciata) I have checked up my description with a specimen of the latter but cannot find that it differs in any material respect

Total length o 900 tail 140 9 1100, tail 175 mm

There are two races.

I Elaphe porphyracea porphyracea

Pale to deep reddish brown above with broad dark brown, black-edged cross-bars (14 to 16+3 to 4 in number) which narrow on the sides of the body In the young they are entirely black and are edged with white on the hinder part of the body and tail they are often obliquely placed and may be reduced to large spots two black parallel dorso lateral lines usually present on the hinder part of the body and tail, a black stripe down the middle of the head and another on each aide usually connecting with the first transverse mark on the neck lower parts uniform vellowish.

Range Eastern Himalayas (Sikkim Darpeeling district), Assam (Abor country, Sadiya Garo and Khasi Hills) Burms Cam Tamai Valley north of Fort Hertz, Mogok, Toungyi, Chm Hills) Yunnan W Chma N Siam (Doi Sutep and Do: Ang Ka) the Malay Peninsula Sumatra

II. Elaphe porphyracea migrofasciala

Differs in having fewer cross-bars (9-12) and in that the black dorso-lateral lines usually extend the whole length of

Range Tong King S China, Hainan, Lan tas I near Hong Long

96 Elaphe leonardi.

Colodo iconordi Wall, 19⁴ I J Rombay N H S, xxvin, p 43, plantid corrector allo foshum Kaba, Upper Burma London), and an extension of the Colombay Colomba

Elaphe bonords bonords, Smith, Ron, Ind. Mas. xlu, 1940 p 481 Chips. Sometic Appears Bourret. 1934 Ball. Gen. Instr Pub. Hanci, March. P 7 (Chaps. Tong King Parm) and Serp Indo-Chins, 1936, p. 192, fig head.

Anterior maxillary teeth largest, smout twice as long as the eye no loreal, the posterior nasal in contact with the ELAPHE.

157

preocular; 7 supralabials, 3rd and 4th touching the eye; 1 or 2 anterior temporals. Scales in 19:19:17 rows, smooth: V. 201-226, feebly angulate laterally; C. 53-60; A. 2.

Hemipenis extending to the 10th caudal plate; the extreme tip is calyculate, the rest of the organ spinose, the spines being arranged in more or less distinct longitudinal series: distally they are small; they gradually increase in size and proximally are few in number and very large.

Two races can be distinguished.

I. Elaphe leonardi leonardi.

One anterior temporal. Olive-brown above, the scales finely edged with black, and with a series of large, buff, blackedged cross-bars or transversely placed spots; they are irregular in outline and are more or less confluent with smaller. similarly coloured spots on the sides of the body; yellowish below, with large black spots; head light-brown or buff in the young, darker in the adult, with a large, elongated, black. V- or U-shaped mark on the vertex starting on the prefrontal shields, its apex at the nape; a dark vertical stripe below the eye; another behind it, and two more that pass backwards from the eye and unite with the markings on the neck.

Total length: & 810, tail 125 mm.

Range. Upper Burma. Patsarlamdan, long. 98° 10", lat. 27° 38": Sinlun Kaba, Kachin Hills, Kambaiti. Six specimens are known.

II. Elaphe leonardi chapaensis.

Usually 2 anterior temporals. The dorsal spots are replaced by transverse or obliquely placed cross-bars which expand on the sides of the body where they may enclose a black spot.

Bourret gives a lower caudal count (40 to 55) for this form : in the two examples examined by me in Paris, the tails are incomplete.

Range. Chapa, Tong-King.

97. Elaphe mandarina.

MANDARIN SNAKE.

Coluber mandarina Cantor, 1840, Zool. Chusan, p. 483, pl. xii, and Ann. Mag. Nat. Hist. ix, 1842, p. 483 (Chusan I.; London); Boulenger, Cat. Sn. Brit. Mus. ii, 1894, p. 42; Parker, Ann. Mag. Nat. Hist. xv (9) 1925, p. 304.—Elaphe mandarina, Pope, Rept. China, 1935, p. 246, pl. x; Bourret, Serp. Indo-Chine, 1936, p. 194, fig.; Smith, Rec. Ind. Mus. xxxvii, 1935, p. 239, and xlii, 1940, p. 481.

Allahes nove Appendials 1912 Rec. Ind. Mus. xiii. 7.47

Ablabes pavo Annandale, 1912, Rec. Ind. Mus. viii, p. 47, pl. v, fig. 3 (Upper Rotung, Abor country; Calcutta); Prater, J. Bombay N. H. S. xxvi, 1919, p. 683.—Coluber pavo, Wall, ibid. p. 865, and xxix, 1923, p. 621.

Holarchus roulci Angel & Bourret, 1933, Bull. Soc. Zool. Fr. Iviii,

p. 135 (Chapa, Tong-King; Paris).

Posterior maxillary teetli largest. Shout twice as long as the eye lorest very small or absent muted with the pre frontal 7 suprulations 3rl and 4th touching the eye, I or 2 anterior temporal, Scales in 23 23 or 21 10 or 17 rows smooth V 210 240 feebly angulate laterally, C 62-80, A 2

Hemipenia extending to the 14th candal plate, the calver late are a occupies about half the organ, the cups being deeply scalloped this area merces tradually into a spinose one the basal squies being few in number and very large, at the extreme tip of the organ are two small recesses one of which is occup ed by a papilla like process similar to that which is

found in northyracea

hight brown or greyish above with a series of large oval or roun led yellow spots broadly edged with black, there are 22 to 25 on the body in specimens from Tong hing 29 or 30 in specimens from Upper Burma, on the tall the central parts of the spots may disappear and be replaced by black annuli yellowish below with large black quadrangular spots which units or alternate with one another, bend above with black markings numely a band across the snout a crescention mark on the top of the head passing through the eye where it divides into two and a schared mark, its apex on the frontal shield and passing back on the aile of the head behind the mouth to the throat

I have no heatation in uniting Ablabes pure with this Species

Total length & 1600 tail 300 mm.

Rang Upper Hurma (Abor country , Nam Tamai Valley) Tong King (Fan 5: Pan lifts Col des Nuages), Southern

According to Bourret it is not rare at Chapa and has been found also at other places in the mountains of Tong Aing

Genus PTYAS

RAT SNAKER

Marillary teeth 20 to 28 forming a continuous series increasing in size posteriorly increasing in size posteriorly inch eye large with round pupil normally two or three posteriors. loreal shelds a presubocular Body clongate cylindrical acales in 12 110. scales in 17 (18) or 15 (16) rows at mid body with a picalpits, tail long aubeau lale paped

PTYAS. 159

Common characters, unless otherwise stated:—Loreal region concave; nostril large, between two nasals; internasals shorter than the prefrontals; 1 pre- and 2 postoenlars; 8 supralabials, 4th and 5th touching the eye; temporals 2+2;

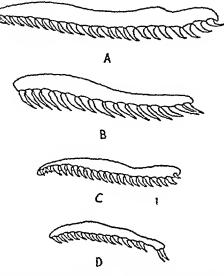


Fig. 48.—Maxillary bones of A. Ptyas mucosus; B. Coluber diadema; C. Opheodrys major; D. Coluber fasciolatus.

posterior genials longer than the anterior, in contact with one another anteriorly; anal divided. A single loreal shield has been recorded occasionally in both species.

Range. The Oriental Region.

Key to the Species.

Scales in 17 or 16 rows at mid-body; V. 190-213 . . . mucosus, p. 159. Scales in 15 rows at mid-body; V. 160-187 korros, p. 162.

98. Ptyas mucosus.

DHAMAN; RAT SNAKE.

(Voluber mucosus, Linn. Mus. Ad. Frid. i, p. 37, pl. 23, and Syst. Nat. Ed. 10, 1758, p. 226 (India: Stockholm); Russell, Ind. Serp. i, 1796, p. 40, pl. 34; Andersson, K. Sven. Vet.-Akad. Handl. Stockholm, xxiv, 1899, iv (6) p. 25—Ptyas mucosus, Günther, Ropt. Brit. Ind. 1864, p. 249; Wall, Sn. Ceylon, 1921, p. 172, and J. Bombay N. H. S. xxix, 1923, p. 617; Prater, ibid. xxx, (1) 1924, p. 169; Subrahmaniam, ibid. xxxvii, 1934, p. 743; Pope, Rept. China, 1935, p. 220; Fraser, J. Bombay N. H. S. xxxix, 1937, p. 475; Shaw & others, J. Darjeeling N. H. S. xiv, 1939, p. 68.—Zamenis mucosus, Boulenger, F. B. I. 1890, p. 324, and Cat. Sn. Brit. Mus. i, 1893, p. 385; Ferguson, J. Bombay

N H S x, 1995, p. 71. Deadon, bld xx, 1910 p. **8 EMBAC, bld xx, 1900 p. 245. became fibel xx 1910, p. 339 MisSt, bd xx 1900 p. 245. Perston, bd xx, 1910 p. 1007. Wall, bd xx 1900 f. p. 250 cell pland p. 1033 fis and xxx, 1910 p. 113, and xxx. (505 p. 60° and xx, 1911 p. 154; N. Koldy, stune do la Russen in 1916 p. 79 McCann, J. Dombry N US xxx; (1931 p. 400. Bourtet Seep Indo-Chara, 1935 p. 173—Zooge meccan Wall J Bombry N H S xxx, 1914 p. 182.

and xxvx 1919 p 568 Coluber blummbach , Morrem 18°0 Tens Byst Amph b p 119 (Bengan)

(Bengal)

Coluber disuma Cantor 1839 P Z S p 51 [Bengal & Burna col sketch in Bodlesin Labrary]

Leplophis infrencius Hallowell, 1860 Fr Arad Rat Sci Philad p 803 (Hong kong)

Maxillary teeth 20 to 25 Scales in 17 18 or 19 17 or 18 14 seefed. \(\) 190-213 sometimes with an obluse lateral keef. \(\) 190-213 sometimes with an obluse lateral keef. \(\) 100-214 or the continues with an obluse lateral keef. \(\) 100-146 \(\) A 2 The vertebrals may or may not be slightly enlarged.

Hampens extending to the 10th-12th caudal plate not forced. The distal one that a footneed the folds at the tay being much fine than those proximally this series is foldered by the foldered

Ohe green bown yellowater research with regular but strongly material but strongly material but strong hand of the body yellowath white below the posternor ventrals (one-time all the ventrals) and suboundate edged with black the say she how are paid obtained with the say that the ventrals and suboundate edged with black the say when how are paid obtained us with the say that the posternor paid to the body are indust het ruses have on the posternor paid to be posternor paid to be desired to make another and may form the body are industed to the body are strictly as permanent of the body are the body and the body are the body are the body are the body and the body are the body and the body are the bo

Total length of 2520 tail 550 Q 1800 tail 450 mm
Many larger individuals have been recorded Millard (1906)
mentions a grant that measured 11 ft 9 m in length As

PTYAS. 161

pointed out by Wall, males in general grow to a larger size than females.

Range. Ceylon; the whole of India to Baluchistan, Afghanistan, Turkestan and Chitral in the north-west; Kashmir and the Himalayas, the whole of Indo-China as far north as the Abor country. Yunnan and Southern China; Hainan; the Andaman Islands I am unable to find any evidence that it occurs in Peninsular Siam or Tenasserim, south of lat. 13° N., or in the Malay Peninsula, but De Rooy (Rept. Indo-Austral. Arch. ii, 1917, p. 98) records it from Java and Sumatra.

The Dhaman or Common Rat Snake is widely distributed throughout the whole of India and Indo-China. Wall (1906)

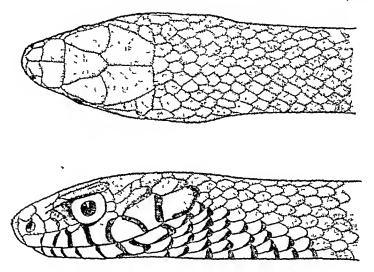


Fig. 49.—Ptyas mucosus. (B.M. 1910.9.6.8.)

and 1921) has given good accounts of the habits of this snake, and my own observations in Siam confirm his remarks. It is mainly an inhabitant of the plains, frequenting the open country, often in the vicinity of human habitations. It is a good climber, and is often found in trees at considerable heights. It is diurnal in its habits, and timid and excitable in disposition, but when cornered can put up a good fight, raising the forebody and throwing it into one or more curves, at the same time inflating the throat. Wall states that at this time it will give vent to a peculiar sound, something like the noise produced by a cat at bay. I have not observed it, although I have seen many individuals. Those that I have kept were always wild and excitable and never grew accustomed to being handled.

VOL. III.

In spite of its name its main food is not rats, but from and toads but it is not particular in its choice of food and is prepared to devour almost anything that comes its way Luzards of all kinds is I occasionally snakes form part of ite diet. In the trees it up tires birds and their young and there is a record of its i nem, attacked a full grown foul. It does not constrict but or reomes such pres as mammals and birds by h Iding them down Willard (in Wall 1906) states One of ti se (Rat Snakes) which we were keeping in the same care as our Pathon cargit a rat which was put in for food by tl tail The rat turns i and but the Dhaman severely and th Di min killed it by holding on to the tail an i pressing the 1st aga not the boly of the Python and the floor of the case bever present must hav been brought to bear as the rat a fill size tope was dead in 3 or 4 minutes Ferguson (1910) comm nting on its pluttons says that its farourit find is a medium sized frog of which a fair sized snake will cut af ut 22 at a meal This will last it a week

Natur takes place in the hot neather May and June tage 0 to 14 is number are d posited in August and beptember the young em rue between the and of beptember and December The eggs measure 4 > 50 × 30-40 mm m sire,

and the tot ng wi en born 370-390 mm in total length The Dhaman is sometimes caten by the country people both of India and Indo China It is one of the few snakes 11 the Oriental region that is eaten by man It's ficah is white a il is said to taste not unlike that of chicken

93 Piyas korres

INDO CHINESE RAT STAKE

Collabor forms of School 1817 1818 RAT STARK.

Collabor forms of School 1817 1819 RAT STARK.

Collabor forms of School 1817 1819 RAT STARK.

Collabor forms of School 1819 RAT STARK.

Collabor forms

p 3 6 (kso shan, Kwangs) Physic kerres and cus Mell 1931 Language Sct J van p 203 (SW

Liopett a l bertat a Barbour 1910 Pr B of Boe Washington 17 h p 109 (Butcherg Java) Dunn, Amer Mus Nov No 281

Maxillary teeth 23 to 28 Scales in 15 15 rarely 13 11 rows smooth V 160-187 C 120-147, 4 2

163 ZAOCYS.

Hemipenis extending to the 10-12th caudal plate; distal half is calvoulate, the cups being feebly serrated and longer than broad; towards the basal end they are larger and much more thickly walled; this area passes abruptly into a spinous one, the spines being thick and fleshy and ending in a spicule; there are 6 or 7 in lateral series: at the base are two much larger spines; the sulcus lips are involved in the calyces.

Olivaceous-green anteriorly, browner posteriorly, the scales on the posterior part of the body edged or tipped with black; yellowish-white below, the outer margins of the ventrals and caudals sometimes edged with black. The young are olivegreenish with narrow white (vellow or pearl-coloured in life) cross-bars composed of series of spots. Some individuals have the scales on the posterior part of the body edged laterally with white, these markings showing up as pale longitudinal lines.

Total length: 3 2000, tail 680; 9 1435, tail 475. mm.

(2198 mm. Wall).

Range. The Indo-Chinese region cast of longitude 92°; in Assam as far north as the Mishmi Hills: in Upper Burma to lat. 28°; Yunnan: S. China: Hainan; Malaysia.

In its choice of haunts, food and disposition the Indo-Chinese Rat Snake is much like the Dhaman. It prefers, however, to live away from habitations and has strong arboreal tendencies, seeming to prefer life in bushes or on low trees rather than on the ground. In Bangkok it was not uncommon. but I found it only in one district, a small area covered with bushes, and during the wet monsoon. From the end of November, when the dry cool weather set in, until the rains commenced some time in April, it was never seen.

Genus ZACCYS.

Zaocys Cope, 1860, Pr. Acad. Sci. Philad. p. 563 (type Coluber dhumnades); Boulenger, F. B. I. 1890, p. 329, and Cat. Sn. Brit. Mus. i, 1893, p. 374; Pope, Rept. China, 1935, p. 207; Bourret, Serp. Indo-Chine, 1936, p. 169; Werner, Zool. Jahrb. Jena, Ivii, 1929, p. 74. Zaocys (Zapyrus) Günther, 1864, Ropt. Brit. Ind. p. 256 (type

Plyas, Wall, J. Bombay N. H. S. xxix, 1923, p. 616.

Maxillary teeth 20 to 33, increasing slightly in size posteriorly. Head elongate, distinct from neck; eye large, with round pupil; a presubocular. Body elongate; scales smooth or more or less distinctly keeled, with apical pits, in 16 or 14 rows at mid-body; ventrals rounded; tail long; subcaudals paired.

Common characters unless otherwise stated —nostral large betwen two massls one large preocular not reaching the frontal 2 | stoculars temporals 2+2 posterior genuls longer than the anterior in contact with one another anteriorly

Range Indo China China Walay Peninsula and Archi

pelago Phil pi ines

2 or 3 loreals.

A single loreal

6 species 2 in Indo China

Key to the Species

carnatus p 184 nigromarginatus p 165

100 Zaocys earinatus

pl 6 (Tenasarim Calcutta) — Piyos tenaserimensis Wall J Bombay N H 8 xxx 1923 p 617

Maxillary teeth 22 to 26 untermeasls two thirds the length of the prefrontals 2-4 lorests 8-10 supralabolas 4th and 5th or 5th and 6th touching the eye Scales in 18 16 or 14 12 rows the 4 to 6 median ones keeled V 208-215 C 110-118 Λ 2

Hemipens extending to the 15th caudal plate not forked on the external wall of the expens and extending from about the middle nearly to the tap are two longitudinal fissures which extend deeply into it and nearly drucket at into two the two parts are united to each other by connective tusine sing which the suless spermatices is eneweyed. On entiting into the hemipens in the usual way the suless see yearly of the middle with the folds on each side. These are sponge it is in form but on close examination are found to be composed of closely set founces transversely arranged distally they form smooth longitudinal folds which converge and meet at the up proximally they are united and form large thick which calves the basal one-third has coarse spines 2 or 3 at least terms have been been yet large.

Our brownish above anterorly with or without black edgines to the scales and with or without a screes of indistinct yellow cross bars the colour of which is manily on the inter-titial skin yellowsh brown posterorly with 6 black irregular longitudinal stripes connected together more or less distinctly to form a network tail black each cask with

ZAOCYS. 165

a large central yellow spot; lower parts whitish anteriorly, black and yellow posteriorly; tail black, each caudal shield with a large semilunar yellow spot.

Total length: 3 3020, tail 730 mm. (about 12 ft. 3 in.).

Range. Tenasserim (Tavoy River): S. Burma (Karin Hills); Siam (Me Pow Forest, 20 miles E. of Muang Ngow, in the extreme north; Nakon-Sri-Tamarat Mts. in the Peninsula); Annam (Bana); the Malay Peninsula and Archipelago.

The largest of all the Asiatic Colubrines. All the specimens,

8 in number, that I have examined, are males.

Z. tenasserimensis differs from carinatus in having 7 and 8 supralabials respectively, one long shield touching the eye, and in having two anterior temporals, one above the other. I regard it as an aberrant individual in which fusion of the labials and temporals has produced this unusual set of characters. It is a juvenile and a female.

101. Zaocys nigromarginatus.

Coluber nigromarginatus Blyth, 1854, J. A. S. Bengal, xxiii, p. 290 (vicinity of Darjeeling; Calcutta).—Zaocys nigromarginatus. Günther, Rept. Brit. Ind. 1864, p. 257, pl. xxii. fig. B; Boulenger, F. B. I. 1890, p. 329, and Cat. Sn. Brit. Mus. i, 1893, p. 376; Wall. J. Bombay N. H. S. xxiii. 1907, p. 325, and xix, 1909, pp. 344, 621; Pope, Rept. China, 1935, p. 214, figs.; Smith, Rec. Ind. Mus. xlii, 1940, p. 481.—Ptyas nigromarginatus, Wall, J. Bombay N. H. S. xxix, 1923, p. 617, and xxx, 1925, p. 812; Shaw & others. J. Darjeeling N. H. S. xiv, 1939, p. 70.

Zaocys dhumnades nigromarginatus Bourret, 1936. Serp. Indo-

Chine, p. 172.

Maxillary teeth 22 to 26; internasals nearly or quite as long as the prefrontals; loreal longer than high; 8 supralabials, 4th and 5th touching the eye. Scales in 18 or 16:16 or 14:14 rows, the 4-6 median ones keeled. V. 190-209; C. 123-142;

A. 2. Hemipenis as in carinatus.

Green above, the scales edged with black, with four broad. black, longitudinal stripes. In the young they extend the whole length of the body and tail, but in the adult are confined to the posterior one-third of the body; the dorsal pair, on each side of the vertebral line, are the broadest and are 2½ scales wide, the lower 1½ to 2 scales wide, border the ventrals; lower parts greenish-white; top of head brown.

Total length: 3 2260, tail 650 mm. (2560, tail 720,

Bourret).

Range. The Eastern Himalayas (Nepal, Sikkim, Darjeeling); Assam and Upper Burma (Khasi, Kachin and Naga Hills and Pangnamdim in the Nam Tamai Valley); Tong-King (Chapa); Yunnan and Western China.

Found in the hills up to 7,000 ft. altitude.

The beauty of this snake in life has been well described by Wall (1907) 'It is difficult to realise from the museum specimens the extreme beauty and brilliancy of colouring of many snakes in life, and this forcibly applies in the present instance. My specimen was a bright green of so soft a hue that the skin looked like reliet This merged into a vellowish green anteriorly and vellow posteriorly, the latter merging into a rich black on the tail The black margins to the scales served to enhance the beauty of the dorsal green The head was olive brown with a bright vellow patch low on the temporal region The chin and throat were white, sparsely speckled at first more heavily later, with light carrilean blue, which

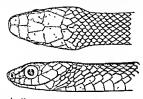


Fig 50 -Zaorys nigromarginative (B.M 1914 3.2 12)

merged to blue green, then pale greenish, and, finally, yellow in the length of the snake Some grey specking was seen beneath the tail "

According to him also (1907) "the secretion of the anal glands was blackish, an unusual colour I have seen only in the Kraits (Bungarus) "

Genus COLUBER.

RACERS

Colaker Lum. 1753, Syst Nat. Ed. 10 p. 216, in part (type onestrice); Stepower Elsatour Check Latt N Amer Amphile A Reg. 1917, p. 78. Ortesburger, Mon. Lum Michagan 1921, p. 1, Weener, Zool Jahrb Iru, 1923, p. 3, Garden 1923, p. 1, Weener, Zool Jahrb Iru, 1923, p. 43, Garden 1924, p. 1930, p. 1933, p. 223. Sandard, Syst. Rep. 100, p. 1933, p. 235, p. 236, p. 236,

Platyceps Blyth, 1860, J. A. S. Bengal, xxix, p. 114 (type semifasciatus).

Megablabes Gunther, 1865, Ann. Mag. Nat. Hist. (3) xv, p. 92

(type olivaceus = dipsas).

Spalerosophis Jan, 1865, in De Fillipi, Viagg. Persia, p. 356; Schmidt, Field Mus. Nat. Hist., Zool. xvii, 1930. p. 226 (type, by designation, microlepis), and ibid. xxiv, 1939. p. 77.

Aryurogena Werner, 1924, Sitz. Bor. Akad. Wiss. Wien, exxxiii,

p. 51 (type restrata).

Acanthocalyx Cope, 1895, Tr. Amer. Phil. Soc. xviii, p. 204 (type centrimaculatus).

The above synonymy refers only to the Oriental species.

Maxillary teeth 13 to 18 (for the species included in this work), increasing in size posteriorly, the last two separated from the others by a more or less distinct interval (except sometimes in diadema). Head elongate, distinct from neck; eye large, with round pupil; one or more suboculars. Body clongate, cylindrical; scales in 19-33 rows at mid-body, reducing by 4-8 rows before the tail, with apieal pits. Ventrals rounded or with a lateral keel; tail moderate or long, subcaudals paired.

Common characters, unless otherwise stated: - Snout projecting; a more or less distinct canthus rostralis; nostril between two nasals: loreal squarish or a little longer than broad: one large preocular, extending on to the upper surface of the head, usually touching the frontal; a presubocular below it: 2 postoculars: posterior genials longer and narrower than the anterior, the latter separated from one another by

small seales.

I. Scales in 19 rows.

Range. Europe; Africa north of the Equator; Asia.

Wall, J. Bombay N. H. S. xviii, 1908, p. 689, and xxix, 1923, p. 618, records a specimen of the African C. florulentus from Quetta, Baluchistan. The specimen cannot now be found.

Key to the Species.

1. Scales in 10 lows.	
Two labials touch the eye; V. 199-211,	[p. 168,
C. 82–119	ventromaculatus,
Two labials touch the eye: V. 205-244,	
C. 110-144	rhodorhachis, p. 168.
One labial touches the eye, the 6th separated	
from it by a subocular	karelini, p. 169.
II. Scales in 21 or 23 rows.	
8 supralabials : C. 77-92	fasciolatus, p. 170.
9 supralabials; C. 118-127, I preocular	
9 supralabials; C. 82-101; 2 preoculars	ravergieri, p. 172.
- wapididosano (or oz 192) - producent	, , , , , , , , , , , , , , , , , , ,
III. Scales in 25 or 33 rows; eye separated	
from the labials by a series of sub-	
oculars.	
Rostral not higher than broad,	diadema, p. 173.
Rostral much higher than broad, produced well	
on to the upper surface of the snout	arenarius, p. 175.

102 Coluber ventromaculatus

Col ther tentromarulat is Gray & Hardwicke 1834 Ill Ind Zool ii pl 80 fg. 1 the type for given, Lendon)—Zamenis central tip 180 fg. 1 the type for given, Lendon)—Zamenis central tip 180 fg. 25 and Cat 8n. Brit Mus. 1879 p. 490 h. blookly Faune de la Russie 1916, p. J. Wall J. Bombay N. H. 8 xris 1814 p. 38, col. pl. and to part xx x 1923 p 618 Ingot by flud xxix 1923 p 123 (older chemes Mart n 1838 P Z S p 81 (Euphrates, London) Italies permitariaties Blyth 1801, J A S Bengal, xxix, p 114 (near Simila) Blanford shed xiv, 1875 p 208

Maxillary teeth 14 or 15 diantems distinct, head very distinct from neck Rostral as high as broad or a little higher, extending well on to the snout, separating the internasals anteriorly internasals a little shorter than the prefrontals, temporals 2+3 9 supralabials, 5th and 6th touching the eye 6th highest and in contact with the lower anterior temporal which is larger than the others Scales in 19 19 15 or 13 rows smooth, V 199-211 angulate laterally, C 82-119 A 2 for specimens from India and Persia

Hemipenis extending to the 10th caudel plate the calyon late area occupies I of the organ the cups being deeply scalloped and spinose this area merges gradually into a spinose one the spines being more or less uniform in size, there are about 20 in lateral series

Light greytsh above with a dorsal series of black cross bars or rhomboidal spots the colour of which is confined chiefly to the edges of the scales a series of smaller spots along the sides of the body formed in the same way, and usually after nating with the dorsal hars ventrals whitish or yellowish, a short black vertebral strip on the neck, an oblique black har below the eye and another on the temple, present or absent Head greyash with or without dark symmetrical markings tail above uniform greyish. The width and intensity of blsckness of the dorsal bars is variable, they may be narrower or broader than their interspaces

Total length & 1000 tail 275 Q 1000, tail 285 mm

Range North Mestern India through Afghanistan and Persia to Uzbekıstan and west to Palestine Recorded in India from Chitral in the north, eastwards to Almora district in the United Provinces and south to Kandesh in the Bombay

103 Coluber rhodorhachis

Zamens rhodorochu Jan. 1865 m Do Fdippi Viagg m Persa, p 336 (Persa) Bouleager P Z 8 1891 p 032 and Cat 8a. 1896 p 152 39 7497 Alecek & Finn J A S Bengal ixv. Well J Bouleager Rame de la Rames 1916, p viagu p 1034 and 2s. 1811. p 1034 and xx1 1911 p 134

COLUBER. 169

Zamenis ladacensis Anderson, 1871, J. A. S. Bengal, xl, p. 16 (Ladak; Calcutta): Boulenger, F. B. I. 1890, p. 326.

Gonyosoma dorsale Anderson, 1871. P. Z. S. p. 395, fig. (Shiraz, Persia: Calcutta).

Zamenis ventrimaculatus, Wall, J. Bombay N. H. S. xxix, 1923, p. 618 (in part).

Like ventromaculatus in head scalation. Scales in 19:19:13 or $11 \text{ rows}: V. \stackrel{?}{\circ} 205-229 (252): \stackrel{?}{\circ} 218-244: C. \stackrel{?}{\circ} 110-144: \stackrel{?}{\circ} 124-136: A. 2 (for specimens from India and Persia). <math>V. 252$ occurs in a $\stackrel{?}{\circ}$ from Gilgit.

Hemipenis like that of rentromaculatus.

Two distinct colour forms can be defined; intergradation between them is rare.

I. Like ventromaculatus, but the dorsal bars often interrupted on the vertebral line, so that series of short paired bars or spots result, or the spots may be arranged in a chessboard pattern; the black vertebral stripe of the nape is replaced by one or two cross-bars; sides of the head with regular spots or vertical bars, the area in front of and behind the eye always yellow; the uniform colour of the tail extends on to the posterior part of the body.

II. Uniform greyish, the scales finely edged with dark green or black, and with a red or pink vertebral stripe which dis-

appears on the hinder part of the body.

Length as in ventromaculatus but of more slender habit.

Range. Egypt, Arabia and Transcaspia to N.W. India. Form I, within Indian limits, is known from Baluchistan, Chitral and Gilgit. Form II inhabits Persia, Arabia and Baluchistan.

Wall has united this species with ventromaculatus, and Form I certainly resembles it very closely. The higher ventral count, however, the greater reduction of scale-rows on the posterior part of the body, and the slight differences in coloration, justify its retention as a distinct species.

104. Coluber karelini.

Coluber (Tyria) karelini Brandt, 1838, Bull. Acad. St. Petersb. iii, p. 243 (S.W. Asia).—Zamenis karelini, Boulenger, F. B. I. 1890, p. 326, and Cat. Sn. Brit. Mus. i, 1893, p. 401; Alcock & Finn, J. A. S. Bengal, lxv, 1896, p. 563; Nikolsky, Faune de la Russie. 1916, p. 98; Wall, J. Bombay N. H. S. xx, 1911, p. 1035, and xxix, 1923, p. 618.

Maxillary teeth 13 to 15, diastema distinct; head very distinct from neck; snout pointed and strongly projecting; rostral as broad as high, extending well on to the snout, separating the internasals anteriorly; internasals usually longer than the prefrontals; temporals 2+3; 9 supralabials, 5th touching the eye, 6th prevented by a subocular. Body more slender than in the two preceding species; scales in

19 19 13 ruws, smooth V 193-212, angulate laterally, C

Hemipens the calyculate area occupies one third of the organ the cups are very large, much longer than broad, and deeply acalloped with spinose edges, the spines are of uniform and about 20 m lateral series

There are two colour forms

I Light greyish above with narrow black cross bars which are broadest on the fore part of the body and always narrower than their intersprees sides of the body with vertical spots. which alternate with the cross bars and extend on to the outer margins of the ventrals a black bar below the eye and

an oblique one on the temple , lower parts whitish or yellowed II Pale greyish above with (in life) a bright orange vertebral stripe the interstitual akin on the anterior part of the body is black and this may include the margins of some of the

Total length & 835, tail 225 . 9 940, t id 230 mm Range Transcuspia Turkestan, Persia, Afghanistan, Baluchistan

A South next Asian species that just reaches India on the Afghan Baluchistan border Both colour forms are known

105 Coluber fasciolatus

BANDED RACER

Blowell Ind herp I 1788 p. 5.0 h xxx (larks)

Record Law Park, 1802 (lex. Zcol up. 5.25 (based on Record barrylands)

Record Blow Parkers Record Company (larks)

Record Parkers Record Record Record Company (larks)

Record Reco

Coluber Rebs Dattdm, 1803, Hut Lat Rept vs. p 385 (based on

Coluber contraportes Center 1839 P Z S p 51 (col aketch m

Bedfean Library I Bengal)

Anyropean restroic Weener 1974 Ritz, Ber Akad, Wass Wien,

Rmith, Ann. Mag Nat. Hat (10) i 1925 p 495

Maxillary teeth 12 to 14, diastema distinct; shout strongly projecting, head feeble distinct from neck, rostral large, much broader than high, sature between the internasals about at long at that between the prefrontals, presubocular sometimes about at long at that between the prefrontals, presubocular sometimes about temporals 2+3 or 3+3, 8 supralabiats, the had at his temporals 2+3 or 3+3, 8 supralabiats, 4th and 5th touching the eye, 5th highest and touching the lower antenor temporal Scales amooth, in 21 or 23 21 or COLDBER. 171

23: 17 or 15 rows. V. 197 to 225, obtusely angulate laterally; C. 77-92: A. 2.

Hemipenis: the distal one-third of the organ has closely packed, deep-walled ealyces; these have finely denticulate edges, but no spines; there are three prominent folds, one of which contains the sulcus; the distal area, both on the folds and between them, is covered with irregularly shaped, closely set papillæ; there are no large spines as in the other species mentioned in this work, but many of the papillæ have minute

spicules projecting from their tips.

The young are light or dark olive-brown above, beantifully ornamented with narrow cross-bars on the anterior half of the body; these are formed by a pattern of white, and dark brown or black, the colours being more or less equally distributed upon the scales; posterior part of body with indistinct dark cross-bars or spots, these markings gradually disappearing towards the tail, which is uniform brown in colour; head above marbled with light and dark olive, and two white spots, one on each side of the interparietal suture. With age the markings tend to disappear, and old individuals are usually uniform brown in colour; lower parts whitish or yellowish.

Total length: 3 1015, tail 250; 2 1000, tail 210 mm.

Wall records an individual 4 ft. 2½ in. (1260 mm.) in length. Range. Peninsular India, extending in the north-west as far as a line drawn from Baroda through Gwalior to the Himalayas south of Nepal; in the east to Western Bengal; northern Ceylon.

According to Wall it is fairly common in Mysorc, and is quite a common snake in Konkan, Bombay district. In other

parts of its wide range it appears to be rare.

A plucky and vicious snake: when molested it erects itself, and flattens the body behind the neck like a cobra, for which snake it is sometimes mistaken (Wall).

106. Coluber gracills.

Zumenis gracilis Günther, 1802, Ann. Mng. Nat. Hist. (3) ix, p. 125, and Rept. Brit. Ind. 1804, p. 254, pl. xxi, fig. H (Sind; London); Boulenger, F. B. I. 1890, p. 327, and Cat. Sn. Brit. Mus. i, 1893, p. 404; Wall, J. Bombay N. H. S. xxix, 1923, p. 618.

Maxillary teeth 13 or 14, diastema distinct; head very distinct from neck; rostral as broad as high, not separating the internasals, which are nearly as long as the prefrontals; temporals 2+2; 9 supralabials, 5th and 6th touching the eye, 6th highest and in contact with the anterior lower temporal. Scales in 21:21:15 rows, smooth. V. 206-222; C. 118-127; A. 2.

Hemipenis not known.

Light greyish brown above, with narrow white, black edged cross bars which expand on the onlier sides of the body and connect soor or less completely with those in front and behind, thus encloung circular or oval spots, these marking become less distinct on the hunder past of the body and to where they are replaced by short, narrow, black cross bars or spots head above with white, black-redged markings, many above a bar across the snout in from of the eye, and two A shaped marks behind one on the vertex, the other on the nape; to lover parts, whithin 6 y sellousth, the outer margins of the

ventrals with black spots Total length 2 930, tail 270 mm

Range India Neighbourhood of Bombay, Central Pro-

A rare snake known only from a few specimens Gunther's illustration of this very beautiful apecies is excellent

107 Coluber ravergleri

Coluber reversiers Menétriée 1832, Cat Rais Oby Zool p 62 (Beku: Leuingrad) — Zomenie raverciers Boulenser Cat Ha. Brit Mus. (1833 p 608, Wall, J Bondard N H & xx. 1911, p 1975, and xx. 1818 p 197, and xxix, 1923 p 619, Nikolsky, Faunc de la Risse 1916 p 192

Manilary teeth 14 or 15, dustema distinct; restral broader than high, sourcely vasible from above, internasals about as long as the prefeoratis, 2 percentars, temporals 2+3 or 3+3, 9 seprembers 6th and 6th touching the eye, 6th highest and in contact with the lower anterior temporal scales in 21, 21, 15 rows, amount or obtusely keeled on the professor with the contraction of the contractions with the contraction of the contract

potterior part of the body V 197-231, C 82-101, A 2
Hemipsens the detail end has two longitudinal, thick,
spronge like lolds, lying on each side of the sulcus, the are
upon one side being smooth, on the other calyculate. The
sprines are relatively short and short, there are from 1s to 20

in lateral series

This buff or greyah above, with a dorsal series of dekthomboids spots or narrow cross best, alternating with a series of audie spots on each ade, on the faul the spots are weally combined, and form three conspicuous longitudinal streams oblique dark streak below the eye, and another the constitution of th

whitch, or more or less obscured with blackish dots Total length - 3 1160, tail 235, 2 1000, tail 215 mm

Roope From Craces, and 250 y 1000, and at the Roope From Craces and Transcaucasis to Balachatan and the N w Provinces Wall (1911) collected 7 examples on Chutta Bittudes varying from 9,000 to 11,000 ft. One has pecked up in a snow duft apparently dead, but revived in the warmth of the hand

108. Coluber diadema.

DIADEM SNAKE.

Russell, 1801, Ind. Serp. ii, p. 34, pl. xxx.

Coluber diadema Schlegel, 1837, Phys. Serp. ii, p. 148 (based on Russell's plato).—Zamenis diadema, Günther, Rept. Brit. Ind. 1864, p. 252, pl. xxi. fig. G; Boulenger, F. B. I. 1890, p. 328, and Cat. Sn. Brit. Mus. i, 1893, p. 411; Wall, J. Bombay N. H. S. xx, 1911, p. 1035, and xxi, 1911, p. 138, and xxiii, 1914, p. 210, col.-pl., and xxix, 1923, p. 619; Nikolsky, Faune de la Russie, 1916, p. 107; Ingoldby, J. Bombay N. H. S. xxix, 1923, p. 129.—Spalerosophis diadema, Schmidt, Field Mus. Nat. Hist., Zool. xvii, 1930, p. 226 and xxiv, 1939, p. 77.

Zamenis diadema var. atriceps Fischer, 1885, Jahrb. Hamburg

Wiss. Anst. ii, p. 102 (Himalayas).

Zamenis diadema melanoides Wall, 1911, J. Bombay N. H. S. xxiii, p. 211 (Jodpur, Rajputana and Baluchistan).

Maxillary teeth 16-18, diastema absent or very slight; head very distinct from neck; rostral not higher than broad;

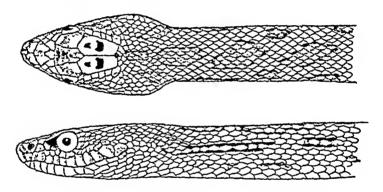


Fig. 51.-Coluber diadema diadema. (B.M. 1901,1.30.10.)

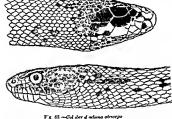
prefrontals broken up into several shields, the median ones forming an angle with the hinder margins of the internasals; 2 loreals, one behind the other; 2 preoculars and a series of suboculars separating the labials from the eye; 3 or 4 post-oculars; temporals small, scale-like, 3 or 4 anterior; 10-13 supralabials; posterior genials usually shorter than the anterior. Scales more or less obtusely keeled, in 29 or 31, rarely 27 or 33 rows at mid-body, 2 or 4 less on the neck, 21 or 19 posteriorly. V. 216-250 (278); C. 82-112; A. 2; for specimens from India, Baluchistan and Afghanistan. V. 278 occurs in a Q from Gilgit.

Hemipenis: the distal half is calyculate, the calyces being large, much longer than broad and with denticulate edges; opposite the sulcus there are a few enormous cups, the area covered by the largest being from 6 to 10 times greater than that occupied by the cups in other parts; these large cups are

separate i from the scient by a short thick spongulorm fold The spinose area is short the spines being coarse and longest dutally and becoming shorter as they approach the base of the organ then are about 20 in lateral series

Two very di tinet colour forms can be defined.

I Coluber diadema diadema Light brownish or gre) ish above with a dorsal series of large dark ro inded or thombordal spots siternating with a much smaller series on each aide of the body head with a regular pattern of darker markings often broken up the most constant being a dark bar between the eyes 11 oblique stripe from behind the eye to the angle of the nouth and a () or () shaped mark on the pariets's these markings are very distinct in the young but become



less distinct as age advances, lower parts whitish sometimes with invisionet dark spots at the outer margins of the ventrals

Il Coluber diadema atricepe Light yellowish brown paler below than above with irregularly scattered dark brown or black spots these may be confined to individual scales or may be much more thickly distributed forming large rhora bondal dorsal spots similar in position to the dorsal spots of forma typica Head partly or entirely black According to Wall, the dark markings of this form are in life claret coloured or searlet Belly uniform rose-pink in life with a lateral mottling of dark spots

It is possible that these two forms represent distinct species

In the arrangement of the dorsal markings, atriceps may resemble the typical form, but I have not seen any specimens of the typical form showing the head pattern of atriceps. The typical form also is more slender in body. The juvenile of the typical form is well known, that of atriceps has not yet been met with.

Total length: 3 1200. tail 220; \$ 1550, tail 325 mm. (atriceps). Wall records an individual 6 ft. 7 in. (1975 mm.)

in length.

Range, C.d. atriceps appears to be confined to India. I have examined specimens from Gilgit, Agra, Jeypore, Allahabad.

Delhi and Harrand.

Forma typica has in India the same distribution as atriceps, but extends its range through Baluchistan, Afghanistan. Southern Turkestan and Persia to Northern Africa.

Wall found this snake common in Chitral at altitudes of 4,000 and 5,000 ft. His coloured plate showing both forms.

is excellent.

Schmidt (1939) splits diadema as here conceived into at least three species, restricting diadema proper to N. W. India. He places them in the genus Spalcrosophis, which, he says, is more allied to Elaphe than to Coluber.

109. Coluber arenarius.

Zamenis arenarius Boulenger, 1890, F. B. I. p. 329 (Karachi and Sind: London). and Cat. Sn. Brit. Mus. i, 1893, p. 413, pl. xxviii, fig. 2; Wall, J. Bombay N. H. S. xxix, 1923, p. 619.—Spalerosophis arenarius, Schmidt, Field Mus. Nat. Hist., Zool. xvíi, 1930, p. 226.

Maxillary teeth 14, diastema very small: head very distinct from neck; rostral much higher than broad, extending well on to the upper surface of the snout, separating the internasals for half, or more than half, their length; prefrontals broken up into 3 or 4 shields arranged in a transverse series, the median forming an angle with the hinder margins of the internasals; 2 loreals, one behind the other: 2 preoculars, and a series of suboculars, separating the labials from the eye; 3 postoculars; temporals small and seale-like, 3 anterior; 10 supralabials; posterior genials longer or shorter than the Scales in 25: 25 or 27:17 rows, obtusely but distinctly kecled, strongly on the posterior part of the body. V. 227, not angulate laterally; C. 80; A. 1.

Hemipenis: much like that of diadema (specimen in poor

condition).

Cream-eolour or pale buff above, with darker spots disposed quincuncially, and a longitudinal streak on each side of the nape; lower parts whitish.

Total length: 3 930; tail 175 mm.

Range NW India Karachi Sind, Rapputana Known from three specimens, the types, two in number, consist of the head and anterior part of the body, the third, in the Indian Museum is complete

Genus KENELAPHIS

Zincluphis Gunther 1864 Rept Brit Ind p 250 (type Azza-gonotus 1 Boulenger, F B I 1890 p 235 and Cat Sn Brit Mus n 1894 p 7 and Rept Malay 1 en 1912 p 139

Maxillary teeth 25 to 30, gradually increasing in size posteriorly compressed head distinct from neck, eye moderately large with round pupil noatrd between two nasals; a pre and a postsubocular, body clongate, cylindrical, rather stout scales smooth in 17 rows, without apical pits, the vertebral row sightly enlarged and hexagonal, ventrals rounded, tail long subcaudals paired Hypapophyses absent on the posterior dorsal vertebra

A single species

110 Xenelaphis hexagonotus.

Internasals as long as, or a little longer than, the prefrontals, local about as long as the eye, I large preocular, 2 postoculars, temporals 2+2, normally 8 supralabials, the 4th touching the eye, the 3rd and 5th excluded by a small presubocular and a large postsubocular , a 3rd subocular sometimes present, separating the eye from the labials, genisis elongate, anterior pair longest Scales in 17 17 15 or 13 rows V 185-199, C 140-179, A 2

Hemipenis extending to the 10th caudal plate, not forked the distal half is calyculate, the cups being large, thick walled and feebly scalloped, the posterior half has large, fleshy spines, 4 or 5 in lateral series, at the extreme tip of the organ there are two smooth pockets; extending the whole length of the call culate area are two folds , they are provided with

abort, stout spines, the larger of the two encloses the sulcus The young are pale brownish in colour, with strongly marked black cross bars, which are indistinct on the posterior part of the body and absent on the tail, these markings

^{*} Accademotus as originally spelt is a ciercal error

disappear with age and adult individuals are dark olive above, the cross-bars showing as indistinct marks on the sides of the body; lower parts uniform vellowish.

Total length: 3 1380, tail 480 mm.

Range. The Malayan Region; Southern Indo-China.

Theobald (1868) records a specimen caught in Rangoon, and Tirant (1885) 2 specimens captured in the gardens of Cholon, near Saigon. It has not been obtained in Indo-China since, and none of the specimens are available for examination now.

Genus OPHEODRYS.

Ophtodrys Fitzinger, 1843, Syst. Rept. p. 26 (type æstivus); Schmidt, Herpotologica, Chicago, i. 1936, p. 63.

Cyclophie Gunther, 1858, Cat. Col. Sn. Brit. Mus. p. 119, and Ropt. Brit. Ind. 1864, p. 229; Schmidt, Herpetologica, Chicago, i, 1936, p. 64 (type astivius).

Eurypholis (not of Pictet, 1850) Hallowell, 1860, Proc. Acad. Nat. Sci. Philad. xii, p. 493 (typo comicarinatus); Popo, Ropt. Chins,

1935, p. 281. Cyclophiops Boulenger, 1888, Ann. Mus. Civ. Genova, (2) vi. p. 599 (type dorin).

Entechinus Cope, 1895, Pr. Acad. Nat. Sci. Philad. xlvi, p. 427 (typo Cyclophia major).

Maxillary teeth 18 to 33, equal, or 1 or 2 of the most anterior and posterior smaller than the others; head distinct from neck; eye large with round pupil. Body elongate, cylindrical. Scales in 15 rows throughout, smooth or keeled, without apical pits; ventrals rounded; tail long, subcaudals paired.

Common characters, unless otherwise stated:-Nostril between two nasals; internasals much smaller than the prefrontals; loreal small, longer than high; 1 pre-, and 2 or 3 postoculars; temporals 1+2; 8, rarely only 7, supralabials, 4th and 5th touching the eye.

Range. The Indo-Chinese subregion; China; Formosa; the

Ríu Kiu Islands; North America.

The genus includes eight species; four are included in the present work; two more inhabit Formosa and the Riu Kiu Islands; the remainder North America. The predominant colour of all the species is green.

Key to the Species.

 Less than 188 ventrals. Internasals truncate anteriorly; anal divided; uniform green above II. Ventrals 194.

major, p. 178. .

multicincta, p. 179.

doriæ, p. 181.

hamptoni, p. 180. X

Anal entire, uniform green above VOL. III.

111 Onheodrys major

Cyclophis major Günther 1858 Cat Col Sa. Brit Size p. 150. (Ningor China Loudon) Boulenger Cat Sn. 1874 bit. 1894 p. 219 — Eurypholesmopr Peppe Rept. China, 1933 p. 233 hgs Bourret Serp Indo-China 1935 p. 4 Acid. Nat Sc Finied. Herpstofogu, Glover Millowed 1889 p. 4 Acid. Nat Sc Finied.

xii, p 503 (Hong kong) Coluber delocours Smith 1930 Ann. Mag Nat Hist (10) vi,

p 581 (Fan-s pan Mountains Tong King; London)

Maxillary teeth 20-23 1 or 2 of the most anterior and posterior smaller than the others (fig 48 p 159) diameter of the eye less than its distance from the nostril truncate anteriorly nostrils lateral genials variable the anterior pair longer or shorter than the posterior Scales in 15 15 15 rows smooth or some of the mid-dorsal rows posteriorly more or less distinctly keeled V 154-178 C 70-

92 A 2 Hem penus extending to the 14th caudal plate not forked the dutal is calyculate the cups being large deep thick



Fig 53 -- Ophrodrys major (B.M 1930 11 18 8)

walled and of almost uniform size throughout the edges are scalloped and have small sparsely acattered spines this area passes abruptly into a spinose one the spines being large and few in mumber

Uniform green above whitish or pale greenish below the colour descending on to the outer margins of the ventral shelds A juvenile from China in the British Museum collection has a vertebral series of black blotches on the anterior part of the body

Total length of 1200 tail 270 (Tong King) 2 795 tail

185 mm (Ning po China) Popes measurements of a good series of specimens from China show that the species is consistently smaller there than it is in Tong Ling he also points out that the males are

larger than the females Variation Fragmentation of the upper anterior portion of

the anterior temporal may occur giving the impression of two anterior shields

Range. China; Hong Kong; Tong-King (Fan-si-pan Mountains).

Found in the hills at varying altitudes

Pope, writing of the snake in China, states "near Yenping I daily met it gliding about on the forest floor. It is apparently diurnal. It neither bites, strikes, nor assumes a defensive pose when annoyed." It feeds upon earthworms and caterpillars. From 4 to 13 eggs are laid at a time.

112. Opheodrys multicinctus.

Ablabes multicinetus Roux, 1907, Zool. Anz. xxxi, p. 762 (Tong-King; Basel).-Liopeltis multicinctus, Angel & Bourret, Bull. Soc. Zool. France, Iviii, 1933, p. 135.—Liopeltis major multi-cinctus, Bourret, Serp. Indo-Chine, 1936, p. 262.—Eurypholis multicinctus, Pope, Rept. China, 1936, p. 285. Ablabes retrofasciatus Angel, 1920, Bull. Mus. Hist. Nat. Paris, xxvi,

p. 293, fig. (Laos; Paris).

Zamenis moi Smith, 1921, P.Z.S. p. 425 (Dran, S. Annam; London); Parker, Ann. Mag. Nat. Hist. 1925 (9) xv, p. 303.

Ablabes multicinctus bicolor Angel, 1929, Bull. Mus. Hist. Nat. Paris (2) i, p. 79 (Chiang-Kouang, Haut Laos; Paris).—Liopeltis

major bicolor, Bourret, Serp. Indo-Chine, 1936, p. 262.

Maxillary teeth 18-20, one or two of the most anterior and posterior smaller than the others; diameter of the eye less than its distance from the nostril; snout distinctly convex, in profile with indistinct canthus rostralis; internasals narrowed anteriorly, the snout more pointed than in major; genials as in major. Scales in 15:15:15 rows, smooth. V. 164-177; C. 72-103; A. 2.

Hemipenis extending to the 14th caudal plate, not forked; the distal half is calyculate and passes abruptly into the spinose area; near the spines, which are relatively large and few, the calyces are thick-walled and edged with numerous short, soft papillæ; distal to this they are smaller and are packed so closely together that only the papillæ are visible on the surface. Parallel to the sulcus on its outer side and extending the whole length of the calyculate area is a broad and prominent fold, deeply recessed on each side (fig. 54B); another shorter and narrower fold lies outside it; these folds are formed by invaginations of the wall of the organ, which show as obliquely placed slits on the outer side; on each side of the sulcus and near the tip the calyculate area is replaced by one with oblique folds; these converge towards one another and terminate at the sulcus in a A-shaped point.

Green above anteriorly, becoming greyer posteriorly, the colour extending on to the outer margins of the ventral scales; on the posterior half of the body and tail there are numerous narrow, whitish, black-edged cross-bars, which may be complete or alternate with those of the opposite side; in some

individuals they are very indistinct and they may be entirely absent, the black edging is not consistent and the pattern is usually formed by one half of a scale being dark, the other light, belly whitish, more or less thickly powdered with green or gree, or entirely greep posteriorly

Total length 3 1070, tail 315, 2 905, tail 265 mm
Range Annam (Langhian, plateau; Col. des Nusges,
Tourane), Haut Laos (Tran-minh plateau), Tong-King
(Chapa, Sam das, Thai men), China (Kwang-sa Province)

Field -

Fig 54.—Remipense of Opheodrys multicinctus (B.M. 1921 4.131)
A. Internal structure B Dorsal view of external covering, showing fold.

113 Opheodrys hamptonl.

Ablabes Asmptom Boulenger, 1900, Ann. Mag Nat Hist. (7) vt. p. 409 (Mogok, Burmas, Londom)—Leopelius Asmptons, Wall, J. Bombsy N. H. S. xxix, 1924, p. 855

Maxillary teeth 2s, respectively, 1989

Maxill

Uniform green above, the colour descending on to the outer margins of the ventral scales: upper lips and lower parts whitish.

Total length: 1070, tail 220 mm.

Known only from the type, which is a female.

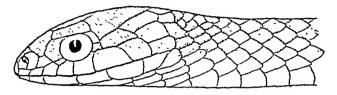


Fig. 55 .- Opheodrys hamptoni. (B.M. 1900.9.20.15.)

114. Opheodrys doriæ.

Cyclophiops doriæ Boulenger, 1888, Ann. Mus. Civ. Genova, (2) vi, p. 599, pl. vi (Kachin Hills, Burma; London and Genos).—
Ablabes doriæ, Boulenger, F. B. I. 1890, p. 306, and Cat. Sn. Brit.
Mus. ii, 1894, p. 279.—Liopeliis doriæ, Wall, J. Bombay N. H. S. xxix, 1924, p. 864, and xxx, 1925, p. 806.—Eurypholis doriæ, Pope, Rept. China, 1935, p. 281, pl. xi.

Maxillary teeth 30-33, small, equal; eye large, its diameter greater than its distance from the nostril; snout shorter and more convex than in hamptoni; internasals truncate anteriorly; nostrils directed outwards and slightly upwards; anterior genials twice as long as the posterior. Scales in 15:15:15 rows, smooth. V. 168-187; C. 74-80; A. 1.

Hemipenis as in major, but the calveulate area less extensive and the cups at the extreme tip packed more closely together.
Uniform green above; upper lip and lower parts whitish.

Total length: 3 795, tail 185 mm. The type in London, which cannot now be found, measured 910 mm. in total length, tail 210 mm.

Range. Assam (Manipur); Upper Burma (Kachin Hllis); S.E. Yunnan. Only three specimens are known.

Genus LIOPELTIS.

Liopeltis Fitzinger, 1843, Syst. Rept. p. 26 (type Herpetodryas tricolor Schlegel); Stejneger, Herpet. Japan, 1907, p. 337; Wall, J. Bombay N. H. S. xxix, 1924, p. 864.

Gongylosoma Fitzinger, l. c. s. p. 25 (type Coronella baliodeira Schlegel); Stejneger, Nyt. Mag. Naturw. Christians, lx, 1922 (2)

Ablabes Dumeril, 1853, Mem. Acad. Sci. Paris, xxiii, p. 454, and Dum. & Bib., Erp. Gen. vii, 1854, p. 304; Boulenger, F. B. I. 1890, p. 304, and Cat. Sn. Brit. Mus. ii, 1894, p. 278 (type Coronella baliodeira by designation 1890).

Phragmitophis Gunther, 1862, Ann. Mag. Nat. Hist. (3) ix, p. 126

(type Cyclophis tricolor).

Maxillary teeth 17 28, equal; head distinct or not from neck eve large with round pupil Body cylindrical Scales m 13 15 or 17 rows not reducing posteriorly (except in stoliczie) smooth without apical pits; ventrals rounded, tail long subcaudats paired

Common characters -1 pre- and 1 or 2 postoculars, tem

porals 1+2

Range The Oriental Region Dwarfed makes, the largest not exceeding (47) mm in total length. Nine species are known the three not included in this work inhabit the Malayan subrezion

Key to the Species

A Head dutines from neck , nostril in a long undivided nasel , head and (or) neck with lungitudinal stripes , scales in 15 rows Lorest present, C 70-105

Loreal present, C 116-134 Loreal united with nasal C 53-78

at liceka. p 184. colomona, p 154. B Head not, or scarcely distinct, from pack, nostril targe between two narata, a dark

her seroes the neck Reales in 17 rows Boales in 15 rows Scales in 12 rows

писобатить р 165 rapyn p 185 priprie p 160

frematus, p 182

115 Liopeltis frenstus

Cyclyska francis Glather, 1838 Cat Col Ro Brit Mos P 193 (Adhanistan , London), and Rept Brit 1nd 1864 p 203 [1 10 Rg 1 - Addicks from 1901 Dollarger P 1930, Almanish p 300, and Cat Ro, Brit Man In 1884, p 203, Almanish Brit 10.4 Ros vm 1912, p 44, Angel Bull Mars 10.3 Passis 10.4 Ros vm 1912, p 54, Angel Bull Mars 10.3 Passis 10 2 202, p 20 - Angel for Some Wall 2 202, 1923, p 10 2 202, p 20 - Angel for Some Wall 2 202, 1923, p 10 2 202, p 203, p 204, and xrx, 1926, p 563, Smith, Rec. Ind. Mus. xh., 1940 p 451

Maxillary teeth 19-21, head not depressed, distinct from neck, about not projecting, nostril rather large, in a long undivided massi, sometimes a suture from it to the internasal loreal squarish or a little longer than high. 7 supralabials, 3rd and 4th touching the eye, anterior genials a little shorter than the posterior Scales in 15 15, 15 rows V 140-172, C 70-105, A 2

Hemipenis extending to the 10th caudal plate, the distal half is calyculate, the cups being deeply scalloped and of almost uniform size, with spinose edges, the proximal half is spinose the spines being relatively large and few in number, parallel to the sulcus at the distal end, there is a short broad fold.

Ohyacrous above, the scales edged with black and some times also with white, forming longitudinal lines on the anterior half of the body , a broad black strips from behind the eye, passing backwards on to the neck, where it runs parallel to its fellow of the opposite side; upper lip and lower parts whitish.

Total length: 3 760, tail 235; \$ 645, tail 195 mm.

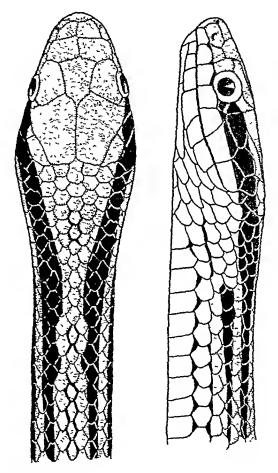


Fig. 56.—Liopeltis frenatus. × 2½. (B.M. 1935.10.12.8-9.)

Range. Assam (Khasi, Kachin and Mishmi Hills); Burma (Bhamo district and the Triangle); Upper Laos (Chieng-Kuang, Tran-ninh plateau); Annam (Tourane).

Found in the hills at altitudes between 2,000 and 6,000 ft. Kaulback found it common at Htingnan, in the Triangle, Upper Burma.

116 Liopeitis stollezke

Attabes striken Scinter 1891 J A B Bengal, in D. 234, pl. 6, tg i Caga Hills Assam Calcutta) Boulenger Ann. Eus Ly Genois (*) xi 1839 p. 233 and Cat S Brisk Man. 1840 p. 481 p. 481 p. 233 and Cat S Brisk Man. 1840 p. 481 p. 481 p. 481 p. 482 p. 48

Maxillary teeth 27 or 28 head distinct from neck much depressed snout projecting twice as long as the eye, nouril rery small in a long undivided mass! loreal aquarish some times inited with the posterior nasal 8 supralabials 4th and oth touching the eve gentals subequal Scales in 15 15 13 108s 1 148-154 C 116-134 A 2

Hem ren s not known.

Crevish above lighter below a broad black stripe on the side of the head extending and gradually disappearing on the fore part of the body a grey stripe on the outer margina of the ventrals and a less distinct and thinner median one present or absent

Total length & 600 tail 225 2 545 tail 205 mm

Range Ekkim Darjeeling district Assam (vaga Hulb) Burma (Karin Hills)

A rare snake only 5 specimens being known

117 Liopeltis calamaria

Cyclophie calamana Ganther 1855 Cat Col En. Bert, Mos-P 250 (Cr) to London — Abbase rolemans, Bouleane F B 7 189 p 5%, and Cat Sa. Brit Mus n 1894, p 35 Wall J Rombay H S zrv. 1919 p, 55 — Lepsilier colomore Wall, En. Ceylon, 19*1 p, 231 fig. and J Bombay H S with 10*2. H 8 xmg 1941 p 865 Homologona balishen Jan 1882, Arch Zoot Agat. Phys. st.

p 35 and Iron Gen, an 1865, Arch 2001 came, pakenown Milan not seen by mel Catlophus manulus Gunther 1864 Rept Brit Ind p. odl pl. 15

fig M (type loc unknown London)

Waxillary teeth . 1.06 head not depressed fairly distinct from neck suont not projecting not twice as long as the eye nostral very small in a long under ded nasal which is united with the loreal mormally 7 supralabula rarely only 6 3rd and 4th tor ching the eye anterior genials a little longer than the posterior Scales in 15 15 15 rows V & 126-142 0 130-154 C & 68-78 9 53-72

according to Wall the variation in specimens from Cevion

u 7 17 134 C. 67 -8 Hemipenis like that of frenatus in general construction, but

the calves smaller more deeply scalloped and packed so closely together that only the papulas are visible on the

surface; the spines are shorter, thicker and more numerous; there is a fold.

Light brown, greyish-brown or greenish, above, the scales usually edged with black, showing as more or less distinct longitudinal lines, the most conspicuous being one on each side of the vertebral region; they are separated from each other by five rows of scales. The area enclosed between them may be of a darker colour than that of the rest of the body; lower parts whitish (yellow in life); a series of dark spots on each side of the head, the remnants of temporal stripes.

Total length: 335, tail 108; 2390, tail 100 mm.

Range. Ceylon; the Western Ghats as far North as Matheran; Tinnevelly Hills; Mysore Platean; Bangalore; United Provinces (Melaghat, Almora District, Kurkhana, Gonda District); Chota Nagpur (Surguja).

Found in the hills; widely distributed but nowhere common.

118. Liopeltis nicobariensis.

Ablabes nicobariensis Stoliczka, 1870, J.A.S. Bengal, XXXIX, p. 184, pl. xi, fig. 1 (Nancowry Haven, Camorta I., Nicobars; Calcutta); Boulenger, F.B.I. 1890, p. 307, and Cat. Sn. Brit. Mus. ii, 1894, p. 285.—Liopellis nicobariensis, Wall, J. Bombay N. H. S. XXIX, 1924, p. 865.

Maxillary teeth 17-18; head not depressed, scarcely distinct from neek; snout not projecting, twice as long as the eye; nostril large, between two nasals, the posterior shield being much larger than the other and in contact with the preocular; no loreal; 7 supralabials, 3rd and 4th touching the eye, 7th very large; temporals short, 2+2; genials subequal. Scales in 17:17:17 rows. V. 192; C. 84; A. 2.

Hemipenis not known.

"Anterior half of the body reddish brown above, posterior blackish grey; head above blackish, the first three labials with yellow spots; a short broad yellow streak from behind and below the eye posteriorly to the angle of the mouth; a black collar, margined on both sides with an interrupted yellow band, of which the anterior is the most distinct; an indistinct scries of blackish-grey dorsal spots, almost forming a dark undulating band; sides marbled and freckled blackish grey, this colour being separated from the upper brown one by a series of closely set black spots, which are partially conspicuous on the posterior part of the body; chin dusky; lower parts yellow with a vermilion tinge; each ventral with a large black spot near its outer extremity."

Total length: 2 440, tail 110 mm.

The description of the colour is Stoliczka's. The type and only known specimen is now somewhat faded but is otherwise in a fairly good state of preservation.

119 Liopeltis rappi

Ablober rapp: Ganther 1860 P Z S p 154, pl. xxvi, fig B (Skim London Boulenger F B I 1890 p 307 and Cal Sa. B t Mus u, 1894 p 282 Wall, J Bombay N H. S rr. 1909 p 351 -Ablabes rappus Shaw & Shebbeare J Darjeeing 1909 p 31 Shaw Shebb & Barker J Bengal h H S xv 1940 p 62-Lopeltus ropps Wall, ibid xxx. 1974 p 863

Ablabes owern Gunther 1860 P Z S p 155 pl xxvi, fig A (Sikkim London)

Maxillary teeth 20-2? head somewhat depressed smout projecting twice as long as the eye nostril large between two nasals loreal a little longer than high 6 aupralabials 3rd and 4th touching the eye 5th largest temporals 1+1 the anterior usually very long anterior genials longer than the posterior Scales in 15 15 15 rows V 178-195 C 60-76 A 2

Hemipenis extending to the 7th caudal plate the calyculate area occupies less than half the organ the cups are smallest at the tip and gradually increase in size towards the spinore area the spines are large and numerous and of almost uniform size except at the extreme base where there are two very

large ones there is no fold

Brown above with small black anots and lateral transverse bars on the anterior quarter or third of the body a broad hlack light edged har across the nape These markings may disappear entirely in the adult leaving the upper parts uniform dark brown in colour lower parts whitish (yellow

Total length o 455 tail 115 2 440 tail 110 mm. Range W Himslayas (Simia) E Himalayas (Nepal

Darjeeling district) The S mla specimen was obtained by Stoliczka and the locality given may be an error. The species has not since been obtained in the W Hunalsyas fairly common in the

Darjeel ng District 120 Liopeltis scriptus

Abdelse Typtus Theobaki, 1888 J. Lann. Soc x, p. 42 and Cale Rept. And Sale 1888 p. 49 (Maraban, Burnet, Britania). Boulenger Sale 1888 p. 49 (Maraban, Burnet, Britania). Boulenger Sale 1889 p. 49 (Maraban, Burnet, Britania). Boulenger Sale 1899 p. 40 (Maraban, Britania). Boulenger Sale 1899 p. 40 (Maraban Raffles Mus No 3 1930 p 56

Maxillary teeth 26-28 head somewhat depressed acarcely distinct from neck smout not projecting not twice as long as the eye nostril large between two nasals loreal very small 8 supralabiala 3rd to 5th touching the eye 7th largest temporals 1+2 the anterior shield twice as long as the CONTIA. 187

posterior; anterior genials shorter than the posterior. Scales in 13:13:13 rows. V. 126-145; C. 87-98: A. 2.

Hemipenis extending to the 7th caudal plate; it is very different in structure to that of the other species. Extending the whole length of the organ are six more or less distinct longitudinal folds; the area between them at the distal end is covered with flattish, irregularly shaped, papilla-like structures; the folds themselves are composed of dense, sponge-like tissue through which project small spines: the two most conspicuous folds border the sulcus.

Light brown or greyish-brown above, the scales edged with black forming more or less distinct longitudinal lines and a series of small black spots on each side of the vertebral line; these markings present only on the anterior part of the body; a broad dark, light-edged bar across the nape; lips yellow

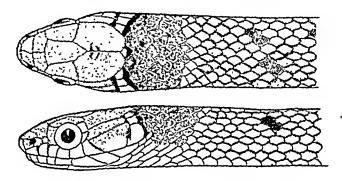


Fig. 57.—Liopeltis scriptus. (B.M. 1921.4.1.24.)

with black spots, the yellow ascending as a vertical bar in front of and behind the eye: lower parts whitish or yellowish.

Total length: 3 465, tail 155; 9 495, tail 175 mm.

Range. S. Burma (Martaban); Siam (Sai-Yoke, Kanburi district; Khao Luang, Nakon Sritamarat Mountains; Pulau Panjang, I. of Puket).

I know of six specimens.

Genus CONTIA.

Contia Baird & Girard, 1853, Cat. N. Amer. Rept. p. 110 (type mitis=tenuis); Boulenger, Cat. Sn. Brit. Mus. ii, 1894, p. 255; Nikolsky, Faune de la Russie, 1916, p. 162; Werner, Zool. Jahrb. Jens, lvii, 1929, p. 145; Wall, J. Bombay N. H. S. xxix, 1923, p. 769.

Eirenis Jan, 1863, Arch. Zool. Anat. Phys. ii, p. 256 (type collaris). Pseudocyclophis Boettger, 1888, Zool. Anz. xi, p. 262 (type walteri); Boulenger, F. B. I. 1890, p. 299.

The above synonymy refers only to the Old World species.

Maxillary teeth 12-2 | subequal Head depressed distinct or not from neck eye moderate or large with round pupil nasal usually entire loreal sometimes absent Body cylind rical scales smooth or he led with apical pita in 15-19 rows ventrals rounded tail moderate or rather short subcaudals

parred Range South western Asia North Africa North America.

Ten or eleven species are known

Dwarfed degenerate makes closely resembling the Oriental Liopritis from which except for the presence of apical pits they are generically indistinguishable

Key to the Species

Scales in 15 rows on the neck C 63-8" persica, p. 183 Scales in 13 rows on the neck ; C 91 98 memalons, p 189

121 Contia persica

Certifichts premote Anderson, 187° P. Z. S. p. 202, for 8 (Boshler Pers. London). Blandredt, Zeol E. Persus, 1878 of Section 1878 of Pers. London. Pers. Lon

D 1902 p 181 D 1907, p. 181
Pseudocyclopist scalers Hostiger 1858 Zool Ang p. 26 (New Serichs VE Persal Boulenger 1 B I 1890) p. 200—Contes statent, Boulenger Cd Sa, Brit Mue h. 1894 p. 263
Viciolity Frince of the Reason 1918 p. 173 Wall, J. Hornbey
N. H. S. Wall, J. Hornbey

N H. S axix, 19 3 P 632 Maxillary feeth 14 or 15 head not or scarcely distinct from neek nostral in a single elongated nasal internasals about as long as the prefrontals frontals about \$ the length of the parietals loreal usually absent 7 supralabials 3rd and 4th touching the eye one pre and one postocular tem

porals 1-1 anterior gentals much longer than the posterior cales in 15 15 13 rows V 185-216 C 63-82 A 2 Hemipenia extending to the 13th caudal plate not forked there are spines throughout those at the extreme base being

a little larger than the others Extending nearly the whole

length of the organ there is a conspicuous fold. Pale bull or greysh brown above uniform or with darker markings lighter below Head and nape with black crossbers or entirely black above Young specimens may have the anterior half or two-thirds of the body above marked with narrow black cross-bars or with a reticulate pattern

Total length 2480 tail 112 mm

Range. Sind; Baluchistan; N.W.F. Provinces (Waziristan, Parachinar and Malakand); Persia; Transcaspia. Wall (1923, p. 770) records it from Murree, W. Himalayas.

122. Contia memahoni.

Contia memahoni Wall, 1911, J. Bombay N. H. S. xx, p. 1037 (Baluchistan; Quetta), and xxix, 1923, p. 771.

Wall has described this species from 4 specimens which were in the Quetta Museum*. He states that it is nearest to persica, but differs in having more subcaudals (91-96), in

having 13 scale rows anteriorly, and in coloration.

"The body dorsally is nearly uniform light brownish, the scales basally rather darker and the head is of a duskier shade in the adult. In the young the head is black, but not quite so black as in typical persica and walteri. Under-parts uniform whitish."

Genus LYTORHYNCHUS.

Lytorhynchus Peters, 1862, Mon. Acad. Berlin, p. 273 (type diadema); Boulenger, Ann. Mag. Nat. Hist. (5) xx, 1887, p. 414, and F. B. I. 1890, p. 322, and Cat. Sn. Brit. Mus. i, 1893, p. 414; Wall, J. Bombay N. H. S. xxix, 1923, p. 619; Werner, Zool. Jahrb. Jena, lvii, 1929, p. 62.

Chatachlein Jan, 1863, Arch. Zool. Anat. Phys. ii, p. 228 (type diadema).—Catachlena Blanford, P. Z. S. 1881, p. 678 (emendation)

tion).

Acontiophis Gunther, 1875, P. Z. S. p. 232 † (type paradoxus).

Maxillary teeth 6-9, the last two longer than the others, and separated from them by an interval. Head slightly distinct from neck, with cuneiform, projecting snout; eye moderate or large, with vertically elliptic pupil; rostral large, projecting, angularly bent in profile, concave inferiorly; nostril an oblique slit between two large nasals. Body elongate, cylindrical; scales smooth, or feebly keeled, without apical pits, in 19:19:17 or 15 rows; ventrals obtusely angulate laterally; tail moderate or short, subcaudals paired.

Range. From N.W. India through Baluchistan and Afghanistan to Northern Africa. Four species are known; three inhabit India. Nothing appears to have been recorded of

their habits.

Key to the Species.

I. Rostral truncate anteriorly. ridgewayi, p. 190. Prefrontal single or divided

II. Rostral pointed anteriorly. Rostral not anchor-shaped; 5th labial touches the

paradoxus, p. 191. Bostral anchor shaped when viewed from above;

eye separated from the labials by suboculars... maynardi, p. 192.

Lost when Quetta was destroyed by the earthquake in 1935. † Also made by him as the type of a new family, the Acontiophidæ.

123 Lytorbynchu- ridgewayl

Lytorhynchus raforers, Boulenger 1837, Ann. Mag. Nis. Rin. (5 sr. 9 412 (Gunk lok Afhenstan, London) and Tr. Lion. Soc. 121 v. 1839 p. 102 pl. si fig. 1, and Cat. Sn. Brit. Mus. 1833 p. 413. A lock & Fran, J. A. S. Bergal inv. (3) 1896, p. 372 v. Mohlyr Fauno is in Resser, 1916 p. 111 Tarrents, Ann. Rus. 2001 Lemantar. 2 at. 1917, p. 85. Well, J. Bornba,

N H S xx p 1037 and tax 1923, p 619 Lyon's makes redynamy, val rosens Elpatjowski & Sabanejew, 1906 Zool Jahrb xxiv P 257, pl 19 figs 6 & 7 (Nachdum, Transcapus)

Lytorhynchus gobrulus Werner 1938, Zool Anz Lenpug exxi (9-10) p 268 figs (Zurat Baluchustan 1 not seen by me)

Rostral fruncate anteriorly, as broad behind as in front, its posterior extremity separating the internasals for a short

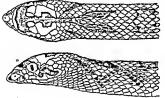


Fig. 58 — Lytorhynchus ridomenys (B.M. 9 21 109 111)

no nostril

distance. A pair of preferretals, or the two united forming a single large shall nearer than the combined internsals, frontal much expanded anteriorly, in good contact with the proper preceding a single single, 2 postoculars, 2 to 4 ubcoulars, those short-daily completely separating the supervision with palassis, from the labals, from preceding, 2 anterior, 7 or 8 tr, asterior Farmal larger than law, or of other to-draw pickly separated by small scape that projectly separated by small scape that Declaration of the Total Control of the Contr

Hempens extending to the 10th caudal plate, not forked the dutal half is cally ulate, the cupe having spinose edges, this arm merges gradually into a spinose one, the spinos at the national morter than the others

Pale buff or greyish above with a series of brown, black-

edged, squarish or transverse spots; sides less distinctly marked with smaller spots; an anchor-shaped marking on the head, the arms extending from one angle of the mouth to the other, passing through the eyes and crossing the frontal and prefrontal; the shank expands into a large spot on the middle of the parietals and bifurcates on the nape; lower parts uniform white.

Total length: 500, tail 80 mm.

Range. Baluchistan (Man, Gusht, Kacha, Sib, Kanki, Quetta): Afghanistan and Southern Turkestan to Transcaspia.

Werner's gabrielis appears to differ from ridgewayi only in having two prefrontals; there is a specimen in the British Museum from Persia also with a pair of prefrontals.

124. Lytorhynchus paradoxus.

Acontiophis paradoxa Günther, 1875, P. Z. S. p. 232, fig. (N. India; London); Murray, Ann. Mag. Nat. Hist. (5) xiv, 1884, p. 110.—Lytorhynchus paradoxus, Boulenger, F. B. I. 1899, p. 323, fig., and Cat. Sn. Brit. Mus. i, 1893, p. 416; Wall, J. Bombay N. H. S. xxix, 1923, p. 619.

Lytorhynchus monticornis Werner, 1926, Sitz. Ber. Akad. Wiss. Wien, exxxv, 3, p. 243 (Sind; Vienna; not seen by me).

Rostral pointed anteriorly, rounded or angular posteriorly, separating the internasals for one-third of their length:

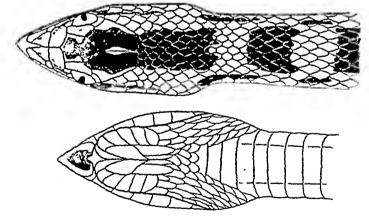


Fig. 59.—Lytorhynchus maynardi.

prefrontals larger than the internasals; frontal expanded anteriorly, in contact with, or just separated from, the preocular; a small lower preocular and a presubocular; loreal single; 2 postoculars; 8 supralabials, 5th touching the eye; mental produced anteriorly, fitting into a depression in the upper jaw; temporals 2+2 or 2+3; posterior genials as long as the anterior, the latter separated by scales Scales smooth.

V 169-180, C 49-53, A 2

Hemipenis apparently like that of ridgeways (bad specimen) Cream coloured above, with a dorsal series of squarish or butterfly shaped spots, and a less distinct lateral series of smaller spots on each side , a large rhomboidal brown spot on the back of the head and a brown streak behind the eye. lower parts white

Total length 370, tail 60 mm Range Sind (Zangipur), W Punjab (Multan)

Four spreimens are known

125 Lytorhynchus maynardt

Lybrhynchus maynerdi Alcook & Finn, 1898, J. A. S. Bengal, kv., p. 562 pl. 14 [S. of Koh Malik-do Khand. Afghan Haluchistan Fronter Calcutta and London); Annandake J. A. S. Benzal, kriu. (5) 1904, p. 208. Wall, J. Bembay N. H. S. xxix, 1923 n. 518.

Rostral pointed anteriorly, anchor shaped when viewed from above, the shank separating the interpasals for half their length, prefrontals shorter than the internasals, frontal scarcely expanded anteriorly, not in contact with the preocular. 2 small preoculars, 3 postoculars and 2 suboculars, the latter completely apparating the eye from the lahuls, a single loreal, temporals 2+2, 7 supralabials, 4th and 5th below the eye, mental produced anteriorly, fitting into a depression in the upper law, sa in paradoxus, genials subequal, the posterior pair separated by scales Scales smooth V 187-199 C 52-54 A 2

Hemipenis as in redgercays

Cream coloured above and below, with a dorsal series of large oval or transversely placed apota of dark brown; a series of amall paler apots on each side, alternating with the dorsal ones. a large elongated spot starting on the frontal, expanded on the psrietals and extending on to the nape

Total length 400, tail 65 mm

Range Known from the type specimens, three in number One had eaten a Lacertid

Genus RHYNCHOPHIS.

Rhynchophus Mocquard, 1897, Bull. Mus Hist Nat Parm, ill. p 215 (type boulers); Pope, Rept Chma, 1935, p 277, fig head . Bourret, Serp Indo Chme, 1936, p 224, fig head

Maxillary teeth 19-21, the last 2 a little stouter than the others , head very distinct from neck , eye moderately large, with round pupil, snout terminating in a long pointed, flexible appendage, covered with small scales; nostril in the nasal, or the shield partly divided. Body elongate, slightly compressed; scales in 19:19:15 rows, smooth, with apical pits; ventrals strongly angulate laterally, the shields feebly notched at the angle; tail moderate, the subcaudals paired. and angulate like the ventrals.

A single species.

126. Rhynchophis boulengeri.

Rhynchophis boulengeri Mocquard, l. c. s. (Isles de Norway, Gulf of Tong-King: Paris); Pope, l. c. s.; Bourret, l. c. s., and Bull. Gen. Instr. Pub., Hanoi, Feb. 1939, p. 21.

Rostral distinct from the nasal appendage; internasals much smaller than the prefrontals; loreal longer than high; I large pre- and 2 or 3 postoculars; temporals 2+2 or 3; 9 or 10 supralabials, 4th to 6th, or 5th to 7th, touching the eye; posterior genials longer than the anterior, separated by small scales.

Green above, paler below, the interstitial skin on the sides of the body black (blue in life) and white, forming oblique lines; a white line at the lateral ventral keel; lips white; an indistinct dark stripe behind the eye. A juvenile male is light brown in colour, paler below, with a dark stripe along the whole side of the head bordering the white of the upper lip.

Total length: Q 1135, tail 300 mm.; length of the rostral

appendage equals its distance from the eye.

Range. Tong-King (Is. de Norway, Tam-dao, Bavi); S.

China (Kwangsi Province).

A rare species. Its habits are arboreal. Bourret (1939) mentions an individual caught on the verandah of a house.

Pope, in spite of differences in the description, unites Proboscidophis versicolor Fan from Southern China with this species.

Genus CORONELLA.

Coronella Laurenti, 1768, Syn. Rept. (type lævis=austriaca);
Boulenger, F. B. I. 1890, p. 308, and Cat. Sn. Brit. Mus. ii, 1894,
p. 188; Werner, Zool. Jahrb. Jena, lvii, 1929, p. 125; Pope,
Rept. China, 1935, p. 287; Mertens, Copeia, 1937, p. 70.
Zacholus Wagler, 1860, Nat. Syst. Amphib. p. 190 (type austriaca),
Meizodon Fischer, 1856, Abh. Nat. Hamburg, iii, p. 112 (type
regularis); Bogert, Bull. Amer. Mus. Nat. Hist. Exvii, 1940.

Wallophis Werner, 1929, Zool. Jahrb. Jena, lvii, 1929 p. 126 (type brachvura).

Maxillary teeth 12 to 20, increasing slightly in size posteriorly, last two largest and separated, or not, by a slight interval; head not, or slightly, distinct from neck: eye large, with VOL. III.

round pupil body cylindrical acales smooth with anical pits in 10 21 or 23 rows at mid body ventrals not or obtusely angulate laterally tail moderate or rather short subcaudals paired, dorsal vertebrus dorsal vertebrus

Range Europe Africa north of the Equator India Chma 7 or 6 species one inhalt ting India

The characters which separate Coronello from its pear relations (Coluber Objection) are not well defined and the position of the species in the genus is still disputed. Werner

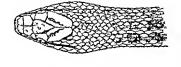




Fig 50 -- Coronello brachyura ×3

1920) divides the group mits three groups namely a Palsactic (Cord.) an Azakle for which he propose the name problems and an Ethiopian (Menadon) the strange must appear and an Ethiopian (Menadon) the strange rather than on more pologous chanciers. Beggert has reading the propose of the Menadon for Ethiopian spreas from the European of the homeson. A manufacture of the description of the contract of the more match some of the homeson of the homeson. A manufacture of the description of the strange of the strange of the description of the strange of the strange of the description of the strange of the

127. Coronella brachyura.

Zamenis brachyurus Günther, 1866, Ann. Mag. Nat. Hist. (3) xviii, p. 27, pl. vi, fig. A (Poona: London); Blanford, J. A. S. Bengal, xxxix, 1870, p. 372; Anderson, P. Z. S., 1871, p. 176.— Coronella brachyura, Boulenger, F. B. I. 1890, p. 309, and Cat. Sn. Brit. Mus. ii, 1894, p. 206; Wall, J. Bombay N. H. S. xxix, 1923, p. 625; Lindberg, ibid. xxxv, 1932, p. 695.

Nostril large, between two nasals; internasals ½ to 3 as long as the prefrontals; frontal nearly as broad as long, in contact with a large preocular; loreal longer than high; 2 postoculars; temporals 2+2; 8 supralabials, 4th and 5th touching the eye; anterior genials larger than the posterior, the latter separated by two or three series of small scales. Scales in 23:23:19 rows; ventrals large, rounded; tail rather short. V. 200-224; C. 46-53; A. 1.

Hemipenis extending to the 13th caudal plate, not forked. The distal half is calyculate, the cups being large and with scalloped edges; the proximal half is spinose, two or three spines at the base being much larger than the others (bad

Olive-brown above, with indistinct light variegations on the anterior half of the body and head; lower parts whitish.

Total length: 3 515, tail 75; \$\times 450, tail 55 mm.

Range. Northern India. Poona district and Visapur. near Bombay; S.E. Berar.

A rare snake.

Genus OLIGODON.

Oligodon Boie, 1827, Isis, p. 519 (type bitorquatus); Boulenger, F. B. I. 1890, p. 317, and Cat. Sn. Brit. Mus. ii, 1894, p. 233; Wall, J. Bombay N. H. S. xix, 1909, p. 556, and Rec. Ind. Mus. xxv, 1923, p. 305; Pope, Rept. China, 1935, p. 300; Bourret, Serp. Indo-Chine, 1936, p. 249.

Simoles (not of Fischer 1817) Dum. & Bib., 1854, Erp. Gen. vii, p. 624 (type russelli); Boulenger, F. B. I. 1890, p. 309.

Rhynchocalamus Gunther, 1864, P.Z.S. p. 491 (type melanocephalus).

Holarchus Cope, 1886, Proc. Amer. Phil. Soc. xxiii, p. 488, and Bull. U.S. Nat. Mus. 1887, p. 54; Stejneger, Herpet. Japan, 1907, p. 353; Pope, Rept. China, 1935, p. 288 (type formosanus); Bourret, Serp. Indo-Chine, 1936, p. 225.

Tripeltis Cope, 1886, Proc. Amer. Phil. Soc. xxiii, p. 487 (type

brevicauda).

Dicraulax Cope, 1893, Amer. Naturalist, xxvii, p. 480 (type trinotatus = purpurascens).

Maxillary teeth 6 to 16, the posterior very strongly enlarged and compressed; palatine teeth well developed or vestigial; head short, not distinct from neck; head shields normal or reduced in number; eye moderate, with round pupil · rostral

large Body cylindrical, scales amouth in all the species mentioned in this work , ventrals rounded or obtusely keeled laterally, subcaudals paired. Hypapophyses absent on the posterior dorsal vertebras

Common characters for the well-developed forms Nostril in an elongated nasal, partly or completely divided by a vertical suture, rostral large, extending well on to the upper surface of the mout partly separating the internasals, loreal squarish, 1 pre and 2 postoculars, 3 or 4 infralablals in contact with the anterior genials, which are 11 to 2 times as

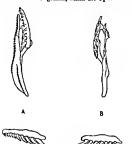


Fig. 61.—Palato-maxillary arch and maxilla of A. Olyodon alborinches and B of O catenata,

long as the posterior The typical head pattern is shown in fig 62, with slight modifications the same head pattern is to be found throughout the genus

Range The majority of the species inhabit the Oriental Region , a few extend their distribution into the neighbouring islands of the Indo Australian Archipelago, to southern China and Formosa and to south western Asia

Between 50 and 60 species are known.

Wall, quite rightly (1923), has united Holarchus with Oispodon, the latter being only a degenerate group of the

former. The passage from one to the other is gradual and no dividing line can be drawn. Degeneration has led to reduction in the number, but not always in the size, of the maxillary teeth; reduction in the number and size of the palatine teeth, but in no species are they entirely lost; reduction in the number of scales round the body and in the number of labials; loss of the loreal by fusion with the prefrontal or posterior

nasal; loss of the internasals.

As shown also by Wall, and later by Pope, the structure of the hemipenis in this genus can be correlated to some extent with other morphological characters, and it appears to form a sound basis for phylogenetic speculation. This is expressed in the table (pp. 198-201). All the species as far as we know that inhabit the Peninsula of India have a spinose organ; most of those in the Indo-Chinese Region a non-spinose one. This difference, however, does not necessarily express phylogeny. Deep forking of the organ, as in the cyclurus-formosanus group, or the presence of a papilla-like process, as in the tæniatus-barroni and in the torquatus-planiceps groups, are I believe sounder evidences of relationship than the presence or absence of spines. The transition from the non-spinose to the spinose condition, or vice versa, is a comparatively small step, as shown in the venustus-travancoricus and the dorsaliserythrogaster-hamptoni groups.

Not much has been written about the habits of the Oligodons. As far as is known all the species are oviparous, but I am not aware of any records of the deposition of eggs. O. cyclurus, the largest species of the genus, may have as many as 16 eggs

(Wall); 3 to 6 is a more usual number.

As regards their diet the larger species have been known to eat small rodents, birds and lizards, but they do not appear to prey regularly upon them; as a genus the Oligodons are particularly fond of eggs, both avian and reptilian, and of the spawn of the amphibia. The smaller species, also, live largely upon insects, grubs and spiders. Meggitt records finding the stomachs of O. cinereus packed with insect remains. In disposition most of the species are quiet and inoffensive; O. cyclurus, however. in my experience is a most vicious creature.

Key to the Sperws of Oligodon

			4	-	2		and the special of the second			
Name	8	Mar	1 mt	Caud	Caud Anal Lab	4	Hem peans	Head sheids	Range	
cyclomas	<u> 1</u>	9	89-10 162 105 37-69	37-69	-	**	Deeply forked no papills	Count lete	N F Inda.	
chimeneu	DZ	27	9-10 170-198 55-60	53-A0	-	•	Deeply f. thet.	Complete	China Tong King	
sugland for	2	10-13	10-12 162 *08 53-69	50.00	_	-	궣	Complete.	E Himslayes.	
machine	÷	2	145-152 76 83	76 83	_	1.3	no sp nee	ret	Annam	
[отоманы	2	17-01	10-11 165-183 46-53	19	-		Deeply forked, short papells no spines	or alerni Complete.	China; Tong-King	
Samsabue	E	2 18	14 16 146-169 30-47	30.41	-		Deeply forked, Complete	Complete	3 Indo-Chias.	
gusdrei nactus	:	21 10	14 10 147 167 33-45 1	Ĭ	_	-	As in tendans Corn lete,	Comp lete,	S. Indo-Chine.	

E. Siam,	Авват.	Assam. Burms.	Indo-China.	N. Siam. Andamans.		Burma, .	Assam ; Burma.	Burma,	Burma,	
Complete.	Complote.	No loreni. Complete,	4 profrontals. Complete.	Complete. Complete or loreal absent.		Completo,	Complete.	Lorosl somo-	No loreal.	
7-8 As in taniatus. Complete.	Not forked, papilla,	no spines. Not known. As in cinercus.	Not forked,	no spines. As in cincreus. Not forked, papillm,	no spines.	Not forked,	no spires. Not forked,	basal spines. Not forked,	papille. Not forked,	populas, spines.
7-8	1-	တထ	œ	α <i>ε</i>		۲	80	80	4-5	
-	-	61 m				61	63	61	61	
32-44	4069	42-45	29-42	43-50		27-34	30-42	27-40	22-27	
135-160 32-44	177-208	171–173 169–193	167-186	187-194 180-190		144-169	164-180	148-173	132-145	
13-14	10-12	8 10-11	10-12	11-12 8-10		15-16	15-16	14-16	10	
17	19-21	17	17–16	17		16	17	17	13	
barrons	albocinctus	melanozonotussplendidus	cincreus	joynsons woodmasons		torqualus	theobaldi,	cruentatus	planiceps	

Obsordon_(continued).

00	1 .			COL	UBRII	Æ				
	Range	W Ghate	W Chats		Ceylon; India.	Indus.	Coylon.	Ceylon.	America Darjecturg tilet,	
•	Head shedds	No lores	No lores		Complete	Lored present	Complete	Complete,	No lores! Complete	_
Key to the Species of Ougodon-(continued).	Homspons	Not forked	Not forked,	flounces	2/5 forked,	throughout Not forked spinose	Porked at tip.	throughout Not forked,	throughout Yot known Not forked,	throughout
hogu	41	٠	!		-	-	-	-	~~	_
0 60 80	Anal Lab	*	**		**	•	41	*	**	_
e Speci	Camel	27-36	34-37		29-50	41-50	23-37	20-24	30 40	_
Key to t	1 ent	133-165	154-155 34-37		159-218 29-50	164-202	134-161	127-152	154	_
	Max tooth	1,	1		ĵ	7	Į	۲-	7 or 8	
	%	Ľ	11		91	11	2	22	22	_
	Name	an indicate	franconcour		temolatus .	Granaia	eubleneatus	balamanna	erythrorackie melaneus	-

W. Ghats.	W. Ghats.	Burma.	Burma. Bongal ; Burma.	E. Himalayas.	Burma.	Tong-King.
No loreal.	No loreal, no internasals.	No loreal, no internasals.	No loreal. Complete.	No loreal.	No internasals,	or absont. No internasals, no loreal.
Not forked,	throughout. Not known.	Not forkod, apinoso	throughout. Not known. 1/3 forked, floured	basal spinos. Not forkod, flounced.	no apinea. Not forked.	flounces. Not known.
- 1	1-	δ		۲۰	70	rc.
64	69	63	63 63	63	63	c3
23-36	25-29	37-43	39 27–51	42-59	3032	25-33+
129-142 23-36	158-173	186-208	200 162–188	160-186	160-176	10-12 162-178 25-33+
7	7-8	_	1-9	7-8	1	10-12
17	15	13	55	17	15	15
affinis	brevicauda	oatenata	macdougallsdorsalis	erythrogaster	hamptoni	lacroixi

128 Oligodon cyclurus

Coronella cyclura Cantor 1839 P Z B p 50 (no type loc given a coloured sketch in Bodiesan Labrary Oxford) — Simotes cyclurus Boulenger F B I 1890 p 311 and Cat Sn. Brit Mu i 1893 p 219 and Ann. Mus Cav Genova, (2) xus, 1893, p 3241 Smith, J Nat Has Bos Saim, 1914, p 97 fg hoad; Wall, J Bombay N H S xrm 1908 p 780—Holorchus tychurus Smith, J Nat Hast Bos Bann is 1920 p 98 Coronaldo realesses Cambor 1839, P Z S p 50 (Rangpur Bengal

col sketch in Bodleian Library)

Simples broatenatus Gunther 1864, Rope Brit Ind. p 317 (type

los unknown London! Simoles fasciolatus Cumher I e a p 218 pl xx, fig B (Petchahun,

SE Sam Loodon) Simotes cochinchments Gunther I c a p 219, pl. xx, fig C [Leon

Mta French Indo China London)

Simotes brevonada Stemalachnor 1887, Rene Novara, Rept p 61 pl in 5re 13 14 (Cochin China, Vionna) Simotes albornous var doreolaterales Wall 1910 J Bonhey

A H. S xxx, p 898 (Jalpaneuri dast : no type selected)
Oligodon purpurarens (nota Schlegel) Wall, J Bombay N H. S

ongram purposerus (non Schlegel) Wall of Hambridge, p. S. 2011 [123 p. 91 and zer. 19.5 p. 91 s. and p. 19.5 p

extry p 55 (Siam Vienne) Smith, Ann. Mag Nat Hut (10) 1, 18°8 p 407

Oligoton klernense Achaep & Hay 1939 Rec Ind. Mns., Exylin. p 519 (North Ebert Division, U.P.: Calcutta)

Normally 8 supralabials 41h and 5th touching the eye, a small subocular below the preocular Scales in 19 or 21, farely 17 or 23 rows 1 & 161-185 2 170-195, angulate laterally . C of 42-68 9 36-46 21 scales at mid body is usual in specimens from Siam and the adjacent parts of Burms, 19 in other parts of its range, 23 occurs in two specimens from North hum 17 in two from Thus Lun S of Hue Annam

Rempens extending to the 12th caudal plate forked at the 5th , proximal to the fork there are a few large, pregular, convoluted folds or short soft papellin, distal to it are numerous small closely set transverse flounces, these become finer as they approach the tip of the organ where they form calyces .

the sulcus lips are very prominent, there are no spines. Total length of 940 tail 140, 2 750, tail 120 mm

Range As given under the colour forms Five colour forms can be distinguished. The first four mtergrade completely with one another , the fifth is provision ally referred to cyclurus

L. Brown above (reddish or prakish in life), with dark brown or black reticulations which are confined to the edges of the scales, uniform whitish below, with or without dark squared

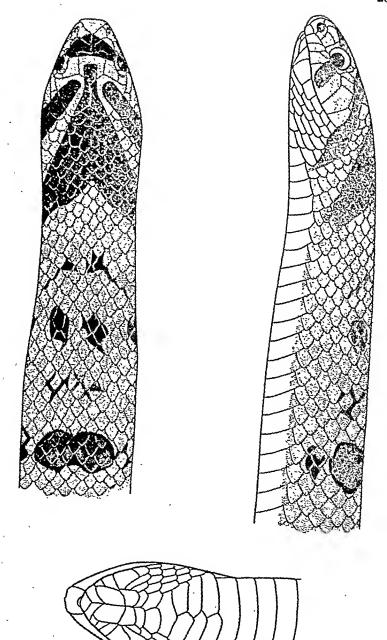


Fig. 62.—Oligodon cyclurus, Var. III. Dorsal, lateral and ventral views of head and neck.

spots at the outer margins of the ventrals, head markings as in fig fi2 but never so distinct (cyclurus, bicatenatus) (fig fi3, A BY

The whole of Burma and Tenasaerim: Assam, Bengal as far west as Khaligany, Rangpur district, Pulo Condore off

the coast of Cochin China

II Fawn or huff coloured above (reddish or punkish m life), whitish below This form which is only an immaculate variety of Form I, may be found in any part of Tenasserum, Burma and Assam Here I place Cantor's violaceus from Bengal, and also Acharn & Ray's Ehersensis from the United Provinces The latter, known only from a single individual, represents the extreme western range of the species Com menting on Forms I and II, Wall states " A fine series of 20 from Maymyo exhibit a wonderful variety in colour and markings ranging from a ground colour like a boiled prawn through ruddy browns to a deep cigar brown "

III Above with a dorsal series of large blackish or dark brown black edged spots, 9 to 18+2 to 4 in number, usually placed transversely, and separated by 3 more or less distinct dark cross-bars, the colour of which is confined to the edges of the scales (fig 63 D), belly usually unspotted in specimens from Siam spotted in those from other parts of its range

(cochinehineness hrevicauda smithi)

The type of fasciolatus is intermediate between this form and Form I (fig 63 C)

Stam as fer south as let 11° 15' N and the adjacent parts of Burma, Cambodia, Cochin China, Annam (Langbian

platesn . Tourage)

IV Lake I or II in dorsal markings with in addition four dark hrown longitudinal stripes, 2 to 21 scales wide, one on each side of the vertebral line, and a narrower and less distinct one on scale rows 3 and 4, belly uniform or spotted (dorso-

North Sam, the whole of Burma and Assam.

V Light brown above with indistinct darker cross bars and with 12+3 completions white, black-edged cross hars, which narrow on the side of the body , whitish below with squarish spots at the outer margins of the ventrals. This form is referred provisionally to cyclerus, it is s juvenile from Maymyo, Burms, and has 19 scales at mid body V 172, C 50 the first 6 of which are undwided. It was presented by Col. Wall to the British Massum in 1924, but does not appear to have been described (fig 63 E)

O cyclurus is a fairly common snake in many parts of southern Indo China, inhabiting the plains, and hills at low

Cantor's type of violaceus was said to have 196 ventrals, a higher count than any recorded for that species, and to have come from Rangpur in Bengal, a locality outside its known range. It was described as being "reddish-violet, the scales

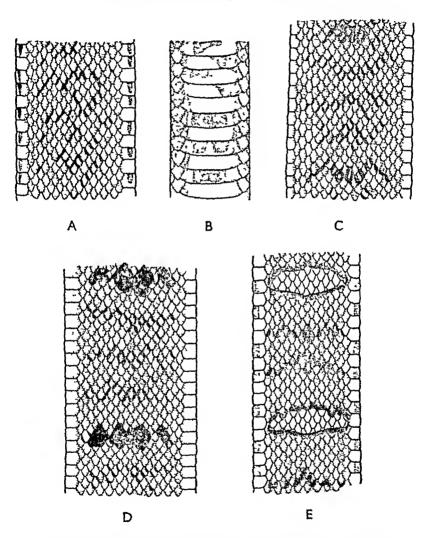


Fig. 63.—Oligodon cyclurus. A. Var. I, dorsal pattern; B. Var. I, ventral pattern; C. Dorsal pattern of the type of fasciolatus; D. Var. III, dorsal pattern; E. Var. V, dorsal pattern.

edged with white, pearl coloured underneath." There can be little doubt I think that Cantor had before him the immaculate form (Form II) of cyclurus This form has not been met with at Rangpur, but I have examined three specimens of Form I from that locality

Examination of the hemipenis of purpurascens from the Malay Peninsula shows that it is not conspectic with eyelurus, its organ having large papilla like processes and approximating to that which is to be found in the Lemotus group As I have stated elsewhere (Bull Raffles Mus 1930), the range of purpurascens in the Malay Pensusula does not extend north of Patani , between that locality and the southernmost range of cyclurus, lat 11° 16', there is an area of country some 300 miles in length from north to south in which no member of

the genus Olsgodon has yet been found Simotes obscurus and S crassus, both of Theobald, Cat Rept Asiat Soc Mus 1868, p 48, type-localities unknown, both in Calcutts, must, on the character of their hemipenes, be

referred to purpurascens

129 Oligodon chinensis

Singres channess Gunther, 1883, Ann. Mag Nat Kiri (6) l.
p. 16 (Lushan, Kiangui: London); Boulonger, Cat 55 Brit
Mus 1, 1894, p. 223, pl. 1x, fig. 1—Holorchus chinense Pope.
Rent Civi. 1995.

Rept Chind, 1935 p. 221 pl 16, pg 1 - 11000 pm.

Rept Chind, 1935 p. 221 pl 16, ps. F. G. H. I. Nat. Hat. (1)

Smouts long-nound Boulemper, 1903 Ann. Mag. Nat. Hat. (1)

May 331 (Man son Mts., Tong King: London)

Rept 1936, pp. 184, pg. 1 - 11000 pm. 184, pp. 184, ni, p 331 Islan son Rie, Tong King ; London) Holarchus rickereus longicuudu (non Boulenger) Bourret, 1938,

Bern Indo-Chine, p 239 Like cyclurus in general scalation and size, but with only 17

scale rows, usually no subocular, and usually only I anterior temporal Henupens extending to the 12th candal plate, forked at

the 5th, for the greater part of its length it has numerous small, closely set, obliquely placed flounces which at the extreme tip of the organ form calyces, starting from near the fork and extending to me. and extending to near the tip there is a prominent disconsi rulge which has a free proximal end; this free chd possibly foreshadows the papilla-like process which is developed strongly in the cineraus and temporas groups, there are no *Dines

Coloration as m cyclures Form III, but the dorsel spots

constantly narrower Range A Chinese species that just extends its range into the Indo Chinese region (Haman Tong King)

130. Oligodon juglandifer.

Simotes albocinctus var juglandifer Wall, 1909, J. Bombay N. H. S. xix, p. 349.—Simotes juglandifer, Wall, ibid. xx, 1911, p. 1162 (Tindharia, Darjeeling dist.).—Oligodon juglandifer, Wall, ibid. xxix, 1923, p. 630, and Rec. Ind. Mus. xxv, 1923, p. 327.

The type of juglandifer, said to be in the British Museum, cannot now be traced, but I have examined two specimens identified by Wall and now in the Indian Museum.

from Gopaldhara, Darjeeling district.

In general proportions and scalation, in the character of the hemipenis and in coloration, like cyclurus; differing in having more maxillary teeth; 7 supralabials, the 4th or 3rd and 4th touching the eye, the 6th in one specimen excluded from the labial border, and in having a higher ventral and subcaudal count (fide Wall). Colour pattern as in cyclurus, Form III.

Range. Known with certainty only from the Darjeeling

district.

My reasons for placing this species in the cyclurus group and not with albocinctus are given in the Key.

131. Oligodon macrurus.

Simotes violaceus macrurus Angel, 1927, Bull. Mus. Hist. Nat. Paris, xxxiii, p. 497 (Pointe Lagan, Southern Annam: Paris).-Holarchus violaccus macrurus, Bourret, Serp. Indo-Chine, 1936, p. 238.

Loreal present or absent; a small subocular below the preocular present or absent; 7 or 8 supralabials, 3rd and 4th, or 4th and 5th touching the eye; I anterior temporal. Scales in 17 rows. V. 143-152, angulate laterally; C. 76-83.

Hemipenis extending to the 29th caudal plate, forked

opposite the 6th; in structure like that of cyclurus.

To this species I refer a second specimen obtained by me from Nha-trang, S. Annam, just north of Pointe Lagan. It differs from the type in having no loreal, and no subocular, characters which in this genus are known to be variable.

In coloration it is light brown above with an indistinct reticulation of darker markings; whitish below; head with a dark stripe below the eye, another behind the mouth, and a wide-angled chevron, its apex continued forwards to the

parietal shields, on the nape.

Total length: 3 365, tail 115 mm.

132 Oligodon formosanus.

Simoles formosinus Gunther 1872, Ann. Mag. Nat. Hist, (4) ix, p 20 (Takao Formosa London); Brulmager, Cat Sa. Brit. Mus 11, 1894 p 212 pl. viu. fig 2.—Holarchus formosarus, Popo, Rept China, 1935 p 293, pl. xi. figs D. E. Simotes hunamenes Boettger, 1894, Ber Senck. Ges. p 133,

pl m (Haman)

Holarchus nanotus Barbour, 1908, Bull. Mus. Comp. Zool. Harvard, h. p 318 (Tingan, Haman's Harvard). Holorchus formosomus molorcoides Moll, 1910, Bitz. Ber Ges. Nat. Fr Berlin, p 323 (Yaoshan, Kwangei)

Holarchus formosanus brustasa Mell, L.c. s (Yaoshan, Kwangvi).

Like cyclurus in general proportions and scalation; scale rows constantly 19, usually only I anterior temporal.

V 165-182, angulate laterally , C 46-52, for specimens from the Indo Chinese remon

Pope has given an excellent account of the peculiar hemipenis of this snake, and I quote his description in full : "The nemipenis is forked opposite the 6th to 7th subcaudal plates; while one branch extends to the 15th, the other to the 17th plate There are no spines, but an extensive proximal area of cross folds or flounces that gradually merge distally mto a much less extensive calyculate region, the calyces of which are shallow and smooth-edged Beyond the point of forking, the sulcus is laterally asymmetrical, being bounded on one side by a raised lip, which, in turn, is backed by a prominent ridge, on the other, by a low, wide area of smooth-edged calyces The ridge that backs the sulens is flounced proximally, calyculate distally, and runs into a large papilla-shaped process at the tip of the organ This process has a calyculate surface "

Coloration as in cyclurus Form I, namely, an indistinct reticulation of blackish transverse markings confined to the edges of the scales, belly uniform or spotted.

A Chinese species which extends its range into the Indo-Chinese region as far as Upper Tong King

133 Oligodon tenistus.

Simette Bernatus Günther, 1891, P Z S p 189, and Rept Ent. Ind. 1804, p 216 pl. xx, £g A (Cambodus London'), Boolieva Cat Sa Bart Mos n, 1894, p 227 (m par'), Smith, J N, et al. 1814, p 98, Barbour, Proc. N. Engl. J N, et al. 1814, p 98, Barbour, Proc. N. Engl. Scientist Laws, 1993, p 30

Servoice Hervaius var recounts Boulenger, 1914, J Nat Hist Soc. Biara, i. p. 70—Heterches ferwates moulett, Cochran. Proc. U.S. Nat Mus. herrit, 1930, p 27; Bourret, Sorp Indo-Chine, 1936,

Eight supralabials, 4th and 5th touching the eye; a small

subocular below the preocular present or absent; 1 anterior temporal. Scales in 17 rows. V. 146-169, angulate laterally; C. 30-47.

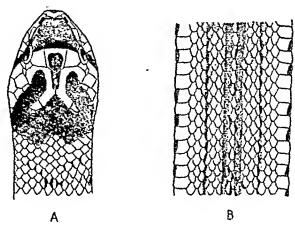


Fig. 64.—Oligodon tæniatus.

A. Dorsal view of head. B. Dorsal pattern.

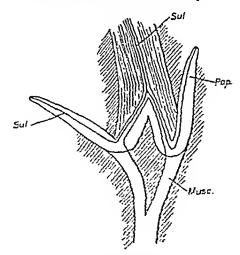


Fig. 65.—Plan of hemipenis of Olijodon teniatus. The papilla-like processes have been separated from the surrounding tissues.

muse, retractor muscle; pap., papilla; sul., sulcus spermaticus.

Hemipenis extending to the 12th caudal plate, forked at the 5th; proximal to the fork it is calvenlate or has coarse folds; distal to it (in each fork) there is a smooth membranous VOL. III. sheath which encloses a large clongate smooth papills-like process, its free end towards the proximal end of the hemipens; the sulcus spermaticus extends down the membranous sheath and then doubles backwards along the process to end at its tip , there are no spines The two papill e of each hemipenis are of equal length

Brown above, with & dark brown longitudinal stripes, the dorsal pair edge the vertebral scales, which are pale in colour, the outer two, on scale rows 3 and 4, stop at the vent; whitsh below (coral red in hife), with numerous black aquarish spots on either aide of the ventral shields or united to form a median bar head markings as in fig 64, a black spot above at the base of the tail, another near the tip, occasionally one or both may be absent Four specimens from the neighbourhood of bairon have a conspicuous yellow vertebral stripe and no dersal apole on the tail

Total length 3340 tail 60, 9330, tail 45 mm Range Siam between lat 12° and 16° N, Cambodia, Cochin China

Common in the neighbourhood of Bangkok.

Boulenger in proposing the name moulets (J N II S Sign. p 70) evidently everlooked Gunther's correction (1864) that the type of tenique had 17 scale rows and not 19 as first

134 Oligodon quadrillneatus

Sin otes quotralineatus Jan. 1886, Nouv Arch. Mus. Pars, b. p 7 and Icon. Gen. 1885 p 12, pl. iv, fig. 3 (Siam i Parsi in part) Simotes Immiatus Boulenger Cat Ba, Brit Mus. il 1894, p 227

(m part) -Holorchus tematus tematus Cochran, Proc U.S. tat Mus laxvu, 1930 p 29 Like ternatus but with 19 scale rows and without black spots on the tail

Range the same

Common in the neighbourhood of Bangkok

The types of quadridinealus are four m number, two are typical quadrilineatus, the other two tennatus

135 Oligodon barroni

S mates barrons Smith 1916 J Nat Hist Soc. Sign, is, p 46,

Seven sometimes 8, supralabiats, 3rd and 4th or 4th and 5th touching the eye, I anterior temporal Scales in 17 135-180, angulate laterally , C 32-44 Hemipenis as in tensatus

Light brown above with large dark brown, light edged spots, 10 to 12+3 or 4 in number, transversely arranged; they are more or less indented mesially, sometimes completely bisected, forming pairs, and confluent with a smaller spot on either side; between the spots are 3 more or less distinct cross-bars, the colour of which is confined to the edges of the scales; yellowish-white below (coral red in life), with large

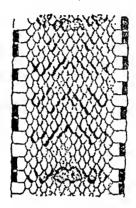


Fig. 66.—Dorsal pattern of Oligodon barroni.

dark squarish spots placed at the sides of the ventrals; head markings as in teniatus.

Total length: 3340, tail 60; 2380, tail 70 mm.

Range. South-eastern Siam (Sriracha district; Dong Rek Mts.); Koh Lam in the Bight of Bangkok; S. Annam.

136. Oligodon albocinctus.

Coronella albocincta Cantor, 1839, P. Z. S. p. 50 (Cherrapungi, Assam: col. sketch in Bodleian Lib.).—Simotes albocinctus, Boulenger, F. B. I. 1890, p. 312, and Cat. Sn. Brit. Mus. ii, 1894, p. 220; Annandale, Rec. Ind. Mus. viii, 1912, p. 48; Venning, J. Bombay N. H. S. xx, 1910, p. 338; Wall, ibid. xix, 1909-1910, pp. 348, 898, and xxii, 1914, p. 766, col. pl.—Oligodon albocinctus, Wall, Rec. Ind. Mus. xxv, 1923, p. 326, and J. Bombay N. H. S. xxix, 1923, p. 631, and xxx, 1925, p. 815, and xxxi, 1920, p. 563; Shaw & Shebbeare, J. Darjeeling N. H. S. iv, 1929, p. 29; Shaw & others, ibid. xiv, 1940, p. 143. Coronella puncticulatus Gray, 1853, Ann. Mag. Nat. Hist. (2) xii, p. 389 (Khasi Hills: London).—Simotes punctulatus, Günther, Rept. Brit. Ind. 1864, p. 217.

Simotes amabilis Günther, 1868, Ann. Mag. Nat. Hist. (4) p. 416, pl. xvii, fig. A (Arakan Hills: London).

Seven supralabials, 3rd and 4th touching the eye; 1 anterior temporal. V. 177-208, angulate laterally; C. 40-69.

Hemipenis extending to the 24th caudal plate, not forked; externally and upon its ventral surface there is a deep, slightly

amuous suicus, which divides the organ partly into two for \$ of its length. On opening the organ the following structures are seen -Proximal to the sulcus it is calyculate, the calyces being smooth-walled and rather stregular in shape; the distal have two narrow areas which are strongly flounced; they are separated from one another by the sulcus; the top of the organ has smooth, longitudinal folds and a short pointed papilla, the base of which is attached to the tip of the organ

Two distinct colour forms can be defined, intergradation between them is rare

212

I Brown above (reddish or punkish in life) with white, yellow or fawn coloured black-edged cross-bars, 19 to 27+4 to 8 in number, belly whitish, with large black squarish spots at

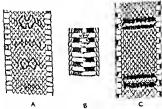


Fig 67 -Olyloton allorenctus A. B Dornal and rentral patterns of forms typics (B.M. 1925 9 11-18) C Doreal pattern of Var IL (Bac & 11 10 139)

the outer margins of the ventrals; head light brown above, with the typical pattern O omabile differs from this form in having 55 cross-bars, due perhaps to doubling of the usual

number (allocancius, punctaculatus) II. Brown above with black or dark brown black-edged cross bare, these may be simple bars, or large rounded spots, or with each spot longitudinally bisected. In this

form the dark cross-bars may disappear entirely with age, leaving the upper parts an almost uniform brown coloration. Range of both forms The Eastern Himalayss as far west as takim; Bengal (Rangpur, Kaligang), the whole of Assam.

Chitiagong province; Burma as far south as the Arrakan

A common snake in the Eastern Himalayas up to 5,000 ft. altitude: rare in Burma.

It is possible that Forms I and II are distinct species, but in the absence of any morphological characters by which to distinguish them, I have placed them together. As already

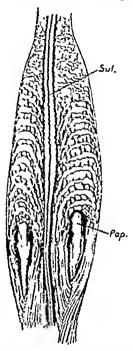


Fig. 68.—Hemipenis of Oligodon albocincus. pap., papilla; sul., sulcus spermaticus.

stated, intergradation, if it occurs at all, is extremely rare, nor can any geographical division of the two forms be made. The status of these two forms is closely paralleled by that of O. two and O. quadrilineatus.

137. Oligodon melazonotus.

Oligodon erythrorhachis (non Wall), Annandale, 1912, Rec. Ind. Mus. viii, p. 48.

Oligodon melazonotus Wall, 1922, Rec. Ind. Mus. xxiv, p. 29 (Upper Rotung Valley, Abor Hills: Calcutta and London), and xxv, 1923, p. 320, and J. Bombay N. H. S. xxix, 1923, p. 630.

No loreal, the prefrontal in contact with the 2nd labial; 6 supralabials, 3rd and 4th touching the eye; 1 anterior temporal. Scales in 17 rows. V. 171-173, not angulate laterally; C. 42-45.

Light brown above with a series of whitish black-edged cross-bar, which in the adult are entirely black, which below with aquasis black poles which sometimes occupy the whole of the ventral shield; head light brown or bull above with the typical markings, which are edged with black.

Total length 520, tail 85 mm

Only 2 sp comens are known, a juyenile and an adult, both of which are females

133 Oligodon spiendidus.

Simples epithodius Guither, 1875, P. Z B p 231, pl. XXXIII (1 Wirmar) London), Boulenger, P. B. L. 1890, p 210, and Lat & Bert Mes B. 1834 p 217, Wall & Evans Lat Lat Bert Mes B. 1834 p 217, Wall XXIII 1844 p. 1845 p. 1845

Postral thick and prominent, a pair of small shields behind the rostral, interposed between the internasals and prefrontals,



Fig 89-Dorsal pattern of Olygodon splendidus (B.M. 74.4.29 55)

completely separating the former; 4 prefrontals; 8 supralabulat, 4th and 5th touching the eye, a small subocular below the precular, 2 suprance temporals Scales in 21 rows. V.169-193, angulate laterally; C 35-47.

Hemipenis extending to the 19th caudal plate; characters as in cinereus.

Light brown above, each scale with a dark centre, and with a series of large, dark brown spots, 14 to 17+3 to 5 in number, mesially indented in front and behind; these spots are edged with blackish and outside again with buff; flanks with a series of smaller spots; whitish or yellowish below, with dark brown spots on the outer margins of the ventrals; head spotted with brown; a dark chevron on the nape, its apex extending on to the frontal.

Total length: 3 710, tail 100; \$\times 730\$, tail 100 mm.

Range. Burma. The Valleys of the Irrawaddy and Chinwin between lat. 20° and 24°. Found chiefly in the plains; not uncommon, according to Wall, in the restricted area in which it occurs.

139. Oligodon cinereus.

Simotes cinercus Gunther, 1864, Rept. Brit. Ind. p. 215 (Cambodia: London).-Oligodon cinereus, Smith, Rec. Ind. Mus. xlii, 1940, p. 481.

Simotes swinhonis Gunther, 1. c. s. pl. xx, fig. E (Amoy, China

London).

Simotes multifasciatus Jan, 1865, Icon. Gen., Liv. 12, pl. iv, fig. 2. Simotes semifasciatus Anderson, 1871, J. A. S. Bengal, xl, p. 16 (Naga Hills, Assam : Calcutta).

Holarchus dolleyanus Cope, 1894, Pr. Acad. Nat. Sci. Philad.

p. 423, pl. 10 (Hainan).

Simotes violaceus, (non Cantor), Boulenger, F. B. I. 1890, p. 312, and Cat. Sn. Brit. Mus. ii, 1894, p. 222, and Ann. Mus. Civ. Genova, (2) xiii, 1893, p. 325; Wall & Evans, J. Bombay N. H. S. xiii, 1901, p. 618; Meggitt, Nature, 1931, exxviii, p. 413.—Oligodon violaceus, Wall, Rec. Ind. Mus. xxv, 1923, p. 318, and J. Bombay N. H. S. xxix, 1923, p. 628, and xx, 1925, p. 814.—Holarchus violaceus, Cochran, Proc. U.S. Nat. Mus. Ixxvii, 1930, (ii) p. 29; Pope, Rept. China, 1935, p. 297, fig.; Smith, J. Nat. Hist. Soc. Siam, iv, 1920, p. 96.

Simotes inornatus Boulenger, 1914, J. Nat. Hist. Soc. Siam, i, p. 68 (Srirachs, S.E. Siam; London); Smith & Kloss, ibid. p. 423, pl. 10 (Hainan).

p. 68 (Sriracha, S.E. Siam: London); Sr i, 1915, p. 245; Smith, ibid. iv, 1920, p. 96. Smith & Kloss, ibid.

Simotes violaceus pallidocinctus Bourret, 1934, Bull. Gen. Instr. Pub. Hanoi, Sept., p. 18, and Serp. Indo Chine, 1936, p. 241 (Saigon: Paris).

Holarchus violaceus tamdacensis Bourret, 1935, l.c.s., April, p. 265, and Serp. Indo-Chine, 1936, p. 239 (Tam-dao, Tong-King: Paris).

Normally 8 supralabials, 4th and 5th touching the eye; a small subocular below the preocular present or absent; usually 1 anterior temporal. Scales in 17 rows, except in V. of 151-175; south-eastern Siam, where there are 15. ♀ 165-185, angulate laterally; C. 3 & ♀ 29-43.

Hemipenis extending to the 14th caudal plate, not forked; the proximal end is calyculate, the calyces gradually merging into a thin membranous longitudinally pleated area which contains two large spongy papills like processes of unequal length their are no spunes Pope (1935) has also given as account of it hemipens He streeses other point in its structur. but in substance our two descriptions do not greatly differ from one another

Four colour forms can be distinguished all except Form

IV intergrading with one another

I Greyish or red lish brown or punkish above without dark markings bells unspotted or powdered with grey, or with industriet grevish square spots at the sides of the rentral shiells heal uniform brown above (cinereus)

Siam as far south as lat 12° 30 in the Peninsula , Tenss

serim Burma as far north as Toungvi Cambodia

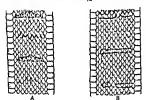


Fig. 70 -Oligodon concreta A. Dorsal pattern of Var III. (B.M 1909 9.20 14) and B of Var IV

II The black edges of some of the scales forming more or icas distinct dark cross bars or reticulations, head uniform brown above (multifasciatus sicinhonis semifasciatus)

Siam and southern Burms , French Indo China Haman ,

Hong Long , Southern China

III Above with very distinct black cross bars, alternating with one sometimes two indistinct ones, belly heavily marked with squarish spots at the outer margins of the ventrals, head markings very variable, in some only a nuchal cherron, in others a complete pattern of the typical form (tandacensa)

Reposition... Bengal (Chitagong Hills), Assam, Burma north to Sman Hka (lat 26° 26 N) and south to lat 20°, Tong King IV. Greyish-brown above with whitish or light brown, black-edged cross-bars, 27 to 34+3 to 4 in number; belly uniform whitish or spotted with grey; nape with a dark chevron in the young, disappearing in the adult (pallidocinctus).

Cochin China (Saigon district); Thua Lun, S. of Hué,

Annam: Pulo Condore, S. China Sea.

Specimens from the extreme south-eastern corner of Siam (south of Petriu) and eastwards to the adjacent territory of Cambodia, have only 15 scale-rows at mid-body; they may belong to colour form I or II. (inornalus).

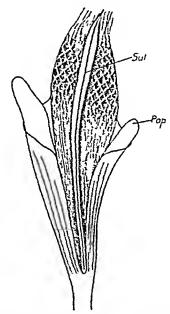


Fig. 71.—Hemipenis of Oligodon cinercus. The papilla-like processes have been separated from the surrounding tissue.

O. cinereus (Forms I and II) extends its range into the Malayan region. It has not been met with in the Peninsula south of lat. 11°, but has been found in North Borneo.

Total length: 3 650, tail 95, Siam; 3 720, tail 100,

♀ 760, tail 75 mm. (Assam).

My reasons for discarding the name violaceus have been

given under cyclurus, p. 205.

Holarchus violaceus poilani Bourret, Bull. Gen. Instr. Pub. Hanoi, Dec. 1939, p. 26, from Dong Tam Ve, Central Annam, may belong here. Not seen by me.

140 Oligodon joynsoni.

Simotes longicourle joynaone Smith, 1917 J Nat Hist Box Siam, u p 276 (Muang \gow: London); Pope, Rept. China, 1833,

Eight supralabials, 4th and 5th touching the eye, a small subocular below the preocular present or absent, 1 or 2 anterior temporals Scales in 17 rows. V. 187-195, feebly angulate laterally , C 43-50

Hemipenia as in cinercus

Dark purplish brown above with strong black reticulations forming more or less distinct cross bars, each alternate one



Fig 72.-Dorsal pattern of Oligodon joyneoni (BML 1921 4.1.2.)

with a black transversely placed spot, belly whitish (red in inte) uniform or heavily marked with rectangular black spots, head with the typical markings

Total length of 760, tail 105 mm

Rosge North Stam (Me Wang and Musng Ngow) Known from 4 specimens

141 Olizoden woodmasoni.,

Simules workmann Selater 1891, J. A. B. Bengal, Ix, p. 235, Ph. 182, J. Chedarnan and Vicobars Ia. Calcutta), Amanda L. 187, J. 183, pp. 173, J. 173, Boulleger, Cas E. B. Man, M. 184, Ph. 187, Ph. 187,

Loreal present or absent , 6 supralabials, 5th largest, 3rd and 4th touching the eye, or 3rd prevented by a small presubocular , I anterior temporal Scales in 17 rows V 180-190,

angulate laterally , C 46-57

Hemipenis extending to the 16th caudal plate, not forked. the proximal \$ 10 floured, the folds being transversely arranged, and towards the tip form calyons, distally there are two large papilla-like processes of spongy structure, one nearly target papilla-like processes of spongy structure. one nearly twice as long as the other, they are enclosed in a calyculate sheath, there are no spines

Dark brown or blackish above with narrow yellow longitudinal stripes, a vertebral and 3 lateral; ventrals whitish or yellowish, the central portion of the shield dark brown and with a dark spot at the outer edge; head with the typical markings.

Total length: 3 620, tail 120 mm.

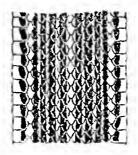


Fig. 73.—Dorsal pattern of Oligodon woodmasoni.

Range. The Andaman and Nicobar Islands.

I have examined three specimens.

Very closely allied to the Malayan octolineatus, from which it is obviously derived.

142. Oligodon torquatus.

Simotes torquatus Boulenger. 1888, Ann. Mus. Civ. Genova, (2) vi, p. 597, pl. v, fig. 1 (Bhamo: London), and F. B. I. 1890, p. 316, and Cat. Sn. Brit. Mus. ii, 1894, p. 232.—Oligodon torquatus, Wall, J. Bombay N. H. S. xxix, 1923, p. 626, and xxx, 1925, p. 814, and Rec. Ind. Mus. xxv, 1923, p. 309.

Seven supralabials, 3rd and 4th touching the eye; I anterior temporal. Scales in 15 rows. V. 144-159, feebly angulate

laterally; C. 27-34.

Hemipenis extending to the Sth caudal plate, not forked. Want of material prevents a proper description of the organ; the proximal portion appears to be longitudinally plicate and at the extremity are two spongy papilla-like processes; there

are no spincs.

Brown or greyish-brown above, with an indistinct reticulation of black and white, the colours being confined to the edges of the scales, and with 4 indistinct blackish longitudinal stripes or scries of pots, 2 vertebral and 2 lateral; whitish below, with squarish black spots which are confined to the posterior part of the body, and may be almost absent; head with obscure blackish markings and a broad dark bar on the nape.

Total length: \$\times\$ 270, tail 30 mm. (292, Wall).

Range. Found only in the hilly country of the Valley of the Irrawaddy between Myitkyina and Bhamo. A common snake at Myitkyina* (Wall).

^{*} Pronounced Mitchinar.

143 Oligodon theobaidl.

J Bombay \ II S xxxx 1923, p 628, and xxx, 1925, p 815.

and Rec Ind Mus xxv, 1923, p 322. Samotes berldomis Boulenger, 1890, F B I p 214, and Cat Sta. Best Mus in 1894 p 225, pl. ix fig 2 (Wynned t London).

Eight supralabials 4th and 5th touching the eye; I anterior temporal Scales in 17 rows V 164-160, not angulate laterally C 20-42

Hemipenis extending to the 18th caudal plate, not forked; the basal half of the organ is spinose, the spines being relatively



Fig 76 - Dorsal pattern of Oligodon steebalds. (B.M. 1925 4.2.35-39)

amall and of uniform size; the distal half contains two large spongiform papilla-like processes Light brown above with narrow closely set transverse or

angular cross bars, the rolour being confined largely to the margus of the scales, and with 4 more or less distinct dark brown longitudinal stripes, 2 broad ones, one on each side of the vertebral line, and 2 narrower lateral ones on scale rows 2 and 3 , yellowish below with or without squarish black spots at the outer margins of the ventrals; head with the typical Total length: 2 390, tail 47 mm.

Range Assam (Tura and Garo Hills); Burma as far north as Mytikyms, and south to Mergui. Found in the plams and in the Library and in the hills; Wall states that it is common at Man-

144. Oligodon cruentatus.

Simotes cruentatus Günther, 1868, Ann. Mag. Nat. Hist. (4) i, p. 417 (Pegu: London); Boullenger, F. B. I. 1890, p. 315, and Ann. Mus. Civ. Genova, (2) xiii, 1893, p. 325, and Cat. Sn. Brit. Mus. ii, 1894, p. 231; Wall & Evans, J. Bombay N. H. S. xiii, 1900, p. 349.—Oligodon cruentatus, Wall, J. Bombay N. H. S. xxix, 1923, p. 629, and Rec. Ind. Mus. xxv, 1923, p. 317.

Closely allied to theobaldi; normally 8 supralabials, 4th and 5th touching the eye; 1 anterior temporal; loreal sometimes absent. Scales in 17 rows. V. 148-173, angulate laterally; C. 27-40.

Hemipenis as in theobaldi, except that the spinose area is larger and the spines gradually increase in size as they approach

the base of the organ.

Greyish-brown above with or without indistinct darker reticulations, and with or without 4 indistinct dark brown longitudinal stripes as in theobaldi; yellowish below with squarish black spots on the ventrals; tail in the young with 2 black annuli, one at the base and the other near the tip; in the adult these are confined to the under-surface of the tail; head in the young with a dark transverse mark behind and dark spots in front in the position of the typical pattern; in the adult they are almost or entirely lost.

Total length: 3 355, tail 55; 2 365, tail 45 mm.

Range. Burma between lats. 16° and 20° N. Wall records it from Mandalay and Bhamo, but I have not been able to trace the specimens.

145. Oligodon planiceps.

Simotes planiceps Boulenger, 1888, Ann. Mus. Civ. Genova, (2) vi, p. 597, pl. v. fig. 2 (Minhla, Burma: Genoa), and F. B. I. 1890, p. 316, and Cat. Sn. Brit. Mus. ii, 1894, p. 232.—Oligodon planiceps, Wall, J. Bombay N. H. S. xxix, 1923, p. 626, and Rec. Ind. Mus. xxv, 1923, p. 307.—Holarchus planiceps, Pope, Rept. China, 1935, p. 289.

Rostral entirely separating the internasals; no loreal; 5 sometimes only 4 supralabials, 3rd touching the eye; 1 anterior temporal.

Scales in $\bar{1}3$ rows. V. 132-142, angulate laterally; C. 22-

27.

Hemipenis not forked, spinose, with papillæ (fide Pope).

Brown above with an indistinct reticulation of darker markings; yellowish below, the ventrals and subcaudals with squarish black spots which are mostly confined to the outer margins of the shields; head markings as in cruentatus.

Total length: 2230, tail 22 mm.

Range. Lower Burma (Rangoon and Tharrawaddy districts). Four specimens are known.

146 Oligodon venustus.

Xenodon remartum Jerdon, 1833 J A 8 Bergal, xxii. 5 23 (A Can a d at type host)—Senotes remarks Gunther Rep (D Can a d at type host)—Senotes remarks Gunther Rep 1800 p 317 and Cat Sh. Bret Mas ii 1934, 9 255 Wal. 1800 p 317 and Cat Sh. Bret Mas ii 1934, 9 255 Wal. 1 Bombay V 15 x xxii 1914 p 185 and zxx, 1819 p 56° and xxii, 1922 p 699 and Rec D Mass xx, 1922 p 319 Senote beceeding Dean R Beb 1824 Exp Gen vii. p 629

(Mahase dus Turs)
Soven sometimes 6 unstalbais 3rd and 4th touching the eye, 6th often excluded from the label border, no lorest, the posterior nastal characte, ownertimes meeting the proceeding 1 aittener temporal ficales in 17 rows V 138-165 not angulate laterally, C 27-26.



Fig 75 - Dorsal pattern of Oligodon sensatus (B.M. 23 1.27 44.)

Hempens extending to the 9th caudal plate, not forked, the distal \$\frac{1}{2}\$ is flounced, the flounces being transverselv arranged, they merge into a short proximal spinose area, the spines being relatively coarse and closely set

Greynt brownabore withinge irregular oral, or rhomfondal, sometimes pained, blackish spots edged with lighter, also with missier spots, below yellowsh or whitait with proback quadrilateral spots the two colours in nearly equal reportions except under the stal where the yellow predominates, head with the characteristic markings, the outlines of which are more one secretaria.

Rotal length of 490, tail 60 mm

Range Western Ghats south of the Goa Gap Wynaad.
Nileys and Palus Hills Cochus Travancore Not uncommon
in the Wynaad between 5 000 and 6 000 ft altitude.

147. Oligodon travancoricus.

Oligodon travancoricam Beddome, 1877, P.Z.S. p. 685 (S. Travancore Mts.: London).—Oligodon travancoricus, Boulenger, F. B. I. 1890, p. 318, and Cat. Sn. Brit. Mus. i, 1890, p. 236, pl. x, fig. 2; Wall, J. Bombay N. H. S. xxiii, 1914, p. 169, and xxiv, 1923, p. 629, and Rec. Ind. Mus. xxv, 1923, p. 316.

Very closely allied to venustus with which it agrees in scalation.

Hemipenis the same except that the flounces are edged with numerous small spines.

In coloration it differs in that the large paired spots are narrower and form more or less distinct transverse bars.

Total length: 3 450, tail 65 mm.

Range. Western Ghats, South of the Palghat Gap. (High Range, Travancore: Tinnevelly Hills.)

148. Oligodon tæniolatus.

Russell, i, 1796, pl. 19, p. 24 (Vizagapatam).

Coronella txmiolata Jerdon, 1853, J. A. S. Bengal, xxii, p. 528.-Oligodon taniolatus, Wall, Sn. Ceylon, 1921, p. 239, and J. Bombay N. H. S. xxix, 1923, p. 627, and Rec. Ind. Mus. xxv, 1923, p. 311; Prater, J. Bombay N. H. S. xxx, 1924, p. 171; Fraser, ibid. xxxix, 1937, p. 481.

Xenodon dubium Jerdon, 1853, J. A. S. Bengal, xxii, p. 528 (North

Canara: type lost).

Oligodon subgriseum Dum. & Bibr. 1854, Erp. Gen. vii, p. 59 (Pondicherry: Paris).—Oligodon subgriseus, Günther, Rept. Brit. Ind. 1864, p. 207, pl. xix, fig. F; Jan, Icon. Gén. 1876, 48, pl. i, fig. 3; Boulenger, F. B. I. 1890, p. 321, and Cat. Sn. Brit. Mus. ii, 1894, p. 243; Wall, J. Bombay N. H. S. xvi, 1904, p. 298, and xix, 1909, p. 556, pl. —, and xxvi, 1919, p. 568, and Sn. Ceylon, 1921, p. 239, and Rec. Ind. Mus. xxv, 1902, 211 1923, p. 311.

Oligodon spilonotus Gunther, 1864, Rept. Brit. Ind. p. 207, pl. xix, fig. E (Madras and Malabar: London).
Oligodon fasciatus Gunther, 1864, Rept. Brit. Ind. p. 208, pl. xix,

fig. D (Deccan: London).

Oligodon elliotti Gunther, 1864, Rept. Brit. Ind. p. 207, pl. xix, fig. G (Madras: London); Boulenger, F.B. I. 1890, p. 321, and Cat. Sn. Brit. Mus. ii, 1894, p. 242; Wall, J. Bombay N. H. S. xix, 1909, p. 533, and xxix, 1923, p. 627, and Rec. Ind. Mus, xxv, 1923, p. 313.

Oligodon subgriscus alternans Bethancourt-Ferreira, 1897, J. Acad. Sci. Lisbon (2), iv, p. 224 (Gos: Lisbon: not seen by me).

Oligodon taniolatus var. ccylonicus Wall, 1921, Sn. Ceylon, p. 240.

Seven supralabials, 3rd and 4th touching the eye; I anterior temporal. Scales in 15 rows. V. 158-218, feebly angulate

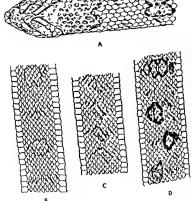
laterally; C. 29-56.

Hemipenis extending to the 11th caudal plate, forked for of its length; proximal to the fork the organ is spinose, the spines being relatively large and increasing in size as they approach the base of the organ; distal to the fork it is smooth with 4 longitudinal folds.

COLUMNIDE. Five colour forms can be defined all completely connected 224

with one another, except Form > I Light brown to buff above with narrow black transverse

ctors have the colour of which is confined to the edges of the



F g 76—Olipodon termiologus A Head of Var 1 (B.M. 74,429); B Domal pattern of same C Dyrosil pattern of Var 11 (B.M. 76,429); 50 8 28 143) and D of Var V

seales and with or without 4 dark brown longitudinal stripes namely 2 broad ones on either sule of the vertebral line, and 2 narrower ones on scale rows 2 and 3 a whitish vertebral stope present or absent bellowish below with or without

lateral spots; head with the typical markings, but the pattern shows considerable variation. The dorsal colour pattern of this form is like that of theobaldi, fig. 74 (tweniolatus: subgriseus).

The whole of Peninsular India from Sind and Baluchistan

in the N.W. to Bengal (Purnea) in the N.E.; Ceylon.

II. The cross-bars are enlarged to form transverse spots of irregular outline; they consist usually of a large median spot and two smaller lateral ones; they may or may not be edged with white (dubius: fasciatus: elliott).

India, south of lat. 20° N.; Ceylon.

III. The dorsal spots are still larger and longitudinally elongate in shape; they are edged with dark brown and about twice as long as their interspaces; there are from 18-22 on the body.

Nilgiri Hills; Madras district.

IV. With large, transversely placed, dark brown blackedged spots (14-16 on the body) usually indented mesially (spilonotus).

Western Ghats: Madras district.

V. With large dark brown rounded spots; these are edged with black and outside again with white. They may be paired or alternate with one another on opposite sides of the vertebral line (alternans).

Travancore; Malabar; Ceylon.

Total length: 3 450, tail 72; \$2 590, tail 63 mm.

Range. As given under the colour forms.

A hill species but occurring also in the plains; found frequently in the vicinity of human habitations.

149. Oligodon arnensis.

Russell, 1796, Ind. Serp. i, pp. 41 and 43, pls. 35 and 38 (Vizagapatam and Arni, N. Arcot).

Coluber arnensis Shaw, 1802, Gen. Zool. iii, p. 526 (based on Russell's fig. 38).—Simotes arnensis, Boulenger, F. B. I. 1890, p. 314, and Cat. Sn. Brit. Mus. ii, 1894, p. 229; Abercromby, Sn. Ceylon, 1910, p. 72; Wall, J. Bombay N. H. S. xviii, 1907, p. 115, and xiv. 1909, p. 532, and xvii. 1914, p. 749, col. p. 115, and xix, 1909, p. 532, and xxii, 1914, p. 749, col. pl. xx.—Oligodon arnensis, Wall, Sn. Ceylon, 1921, p. 231, and Rec. Ind. Mus. xxv, 1923, p. 324, and J. Bombay N. H. S. xxix, 1923, p. 629; Prater, ibid, xxx, 1924, p. 170; Fraser, ibid. ibid. xxxix, 1937, p. 480.

Coluber russelius Daudin, 1803, Hist. Nat. Rept. vi, p. 395, pl. lxxvi, fig. 2 (based on Russell'a fig.).

Simotes albiventer Günther, 1864, Rept. Brit. Ind. p. 213 (near Kandy, Ceylon: London).—Oligodon arnensis albiventer, Deraniyagala, Ceylon J. Sc., Ser. B, xx, 1936, p. 89.

Seven supralabials, 3rd and 4th touching the eye; loreal VOL. III.

226

frequently united with the prefrontal, 1 anterior temporal. Scales in 17 rows V 164-202, angulate laterally, C 41-59

Hempens extending to the 8th caudal plate, not lorked, it is spinose throughout, at the tip the spines are relatively amail and placed close together, they gradually merease m size as they near the base of the organ

Light or dark brown above (often reddish or purplish in

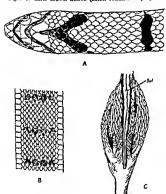


Fig 77.—Ohoodon ornears: A Head and pock. B Dorsal pattern.
(B.M 52 10 4.42) C Hempenss
sul., sulcus spermaticus

his) with well-defined black cross bars or transversely arranged spots these narrow on the sides and may break up, they may be edged with white, whitsh below, uniform or with indistance lateral spots head with 3 chevron shaped marks Total length 2 600, tail 100 mm Range. Ceylon; Peninsular India to Sind, Baluchistan and and the N.W.F.P. (Bannu) in the north-west; the Western Himalayas to Nepal and Bengal (Kaliganj, Rangpur district) in the north-east.

Variation: The number of bars upon the body and tail, and their size, varies considerably; the narrowest are not much more than one scale wide, the broadest may occupy as many as 5 scales. This variation can be correlated very roughly with geographical distribution. Wall (1923, p. 324) has attempted it, but his conclusions differ very considerably from mine. I arrange them as follows:—

Ceylon, 13-18 on the body, 3-6 on the tail.

India, S. of lat. 20°, 18-30 on the body, 4-16 on the tail. India, N. of lat. 20°, 7-20 on the body, 7-20 on the tail.

The loreal is usually present in specimens north of lat. 20°, usually absent in specimens from South of that line and from

Ceylon (arnensis: albiventer).

Wall has given a good account of this common Indian snake and his colour-plate of it is good. It is found chiefly in the plains, but he states that it is common at Almora at 5,400 ft. It has been found also in other hill districts throughout India at varying altitudes. It is an active, voracious little reptile, easily alarmed and quick to conceal itself. Its habits are chiefly diurnal, and it appears to make its home for the most part in masonry, domiciling itself in bungalows and outhouses. He states that it can inflate its body to a remarkable degree when excited.

150. Oligodon sublineatus.

Oligodon sublineatum Dum. & Bibr. 1854, Erp. Gen. vii, p. 57 (Ceylon: Paris).—Oligodon sublineatus, Jan, Icon. Gén. 1876, p. 48, pl. i, fig. 2; Boulenger, F. B. I. 1890, p. 320, and Cat. Sn. Brit. Mus. ii, 1894, p. 242; Wall, Sn. Ceylon, 1921, p. 248, and J. Bombay N. H. S. xxix, 1923, p. 627, and Spol. Zeyl. xiii, 1924, p. 82, and Rec. Ind. Mus. xxv, 1923, p. 314.

Seven supralabials, 3rd and 4th touching the eye; I anterior temporal. Scales in 15 rows. V. 134-161, not angulate laterally; C. 23-37.

Hemipenis extending to the 14th caudal plate, forked near the tip; it is spinose throughout, the spines being almost

uniform in size and regularly arranged.

Brown above, the scales edged with black and white, and with a series of dark brown, more or less rounded spots or narrow cross-bars, which may be paired or alternate with one another; they are best marked on the anterior part of the body; lower parts yellowish with 3 longitudinal series of dark brown spots, the outer series often confluent with one

another the median may be absent head with a dark crescent on the prefrontals passing through the eyes a median elongated spot behind it and a large dark patch on each side of the neck

Total length 2 350 tail 40 mm

Range Ceylon South Prov (Galle), West Prov (Colombo Matugama Veyangoda) Sab wa Prov (Ratnapura and Yatiyantota districts] Central Prov (Pera leniya)
One of the commonest anakes of Ceylon found chiefly in

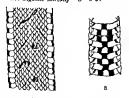
the low country. One individual was obtained in a nest of termites

151 Oligodon calamarius

Coluber columnius Linn. Mus Ad Prid. 1754 p 23 pl vi. fig 3. and Syst Nat 10th Ed. 1755 p 218 f America ; Stock ho m) Anderson, Sv Vet Akad Stockholm, 1893 xxiv 4 6 p B

4 7 p 8 Obyoton templeton Günther 1862, Ann. Mag 'at Hat (3) Lt. p 57 (Ceyron London) and Rept Brit Ind 1864 p 199 pl xx. fig C Bouleager F B I 1 1830 p 3 m and de fan li t Mus 1 1894 p 241; Wall Sa. Ceylon, 197 p 243 and J Borbay X II S xx. 1973 p 527 and Rec Ind Mus xxv 1993 p 315

Seven supralabiate 3rd and 4th touching the eye 6th usually excluded from the lab al border Scales in 15 rows V 197 159 not angulate laterally C 90-34



Fg 78-Olegodon calamarus (B.M 90 11 8 23) A Dorsal and B Vantral pattern

Hemipenis extending to the 10th caudal plate not forked it is spinose throughout the spines being closely set and almost inform in size

Brown above, with a light vertebral stripe and from 18-24 narrow dark brown light edged cross-bars; these may be complete or extend only half-way across the back where they alternate with those of the opposite side; whitish below with square black spots, the two colours being distributed in nearly equal proportions; head markings as in sublineatus.

Total length: 3 250, tail 38 mm.

Range. Ceylon. South Prov. (Udugama); West Prov. (Hewissa, Matugama); Sab'wa Prov. (Ratnapura, Balangoda); Cent. Prov. (Peradeniya).

A low country species ascending to 3,000 or 4,000 ft.

altitude.

152. Oligodon erythrorhachis.

Oligodon crythrorhachis Wall, 1910, J. Bombay N.H.S. xix. p. 923, pl. — (Namsang, Jaipur dist., Assam: London), and xxix, 1923, p. 626, and Rec. Ind. Mus. xxv, 1923, p. 309.

No loreal; 7 supralabials, 3rd and 4th touching the eye; 1 anterior temporal. Scales in 15 rows. V. 154, not angulate

laterally; C. 46.

Brown above with a light (red in life) vertebral stripe, and with 29 narrow, black, light-edged cross-bars on the body and 7 on the tail; yellowish below with squarish black spots at the outer margins of the ventrals and subcaudals; head with the typical markings, namely, a chevron across the prefrontals passing through the eyes, a broad oblique temporal stripe, and a narrow chevron on the nape extending forwards to the prefrontal shields.

Total length: \$\mathcal{Q}\$ 375, tail 62 mm.

Range. Known only from the type-specimen.

153. Oligodon melaneus.

Oligodon melancus Wall, 1909, J. Bombay N. H. S. xix, p. 349, pl. — (Tindharia, Darjeeling dist.: London and Bombay), and ibid. xxix, 1923, p. 628, and Rec. Ind. Mus. xxv, 1923, p. 316.

Seven supralabials, 3rd and 4th touching the eye; I anterior temporal. Scales in 15 rows. V. 152-160, not angulate laterally; C. 39-40.

Hemipenis extending to the 15th caudal plate, not forked; it is spinose throughout, the spines being of almost uniform

size.

Blackish-brown above, the scales finely speckled with lighter, and with an indistinct series of distant black vertebral spots; dark plumbeous below, the lower surface of the head whitish.

Total length: 3 330, tail 55; \$2 300, tail 45 mm.

Known from two specimens.

230

154 Oligodon affinis

Oleodon of nes Günther, 1822 Ann. Mag. hat Rust (1) ix. p. 85 (Anamaliays London), and Rept. Bir Lind. 1884, p. 209, pl xx, fig B Boulenger, F B I 1890, p 318 and Cat 8n. Birt. Mus. u., 1894 p 236, Wall, J. Bornbay N H. S. xxvi. 1919 p 588 and xxix 1923 p 630, and Rec. Ind. Mus. xxv. 1923 p 320.

Seven supralabials, 3rd and 4th louching the eye, no loreal, the posterior useal elongate and often touching the

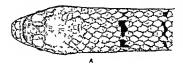




Fig 79 -Olegodon affines (BM 74 4 29 10)
A Head B Dorsal pattern.

preocular, 1 anterior temporal Scales in 17 rows V. 129-142, not sugulate laterally, C 23-38 Hemipenis extending to the 12th caudal plate, not forked.

the usual parts extending to the 12th caudal plate, not forteen, the usual part of the organ has 4 longitudinal folds, two on summer opines, external to the folds there are frounces also must be pines, external to the folds there are frounces also planes to the proximal part of the organ is entirely planes. Brown above with an indistinct reticulation of darker markings and narrow dark brown cross-bars (31 to 41 in number) often edged with lighter; on the tail they are indistinct or absent; whitish below with squarish black spots, the two colours being almost equally distributed; head markings as in the figure.

Total length: 3 340, tail 50 mm.

Range. Western Ghats, south of the Goa Gap. (Wynaad to Travancore.)

155 Oligodon brevicauda.

Oligodon brevicauda Gunther, 1862, Ann. Mag. Nat. Hist. (3) 1x. p. 58 (Anamallays: London), and Rept. Brit. Ind. 1864, p. 211, pl. xix, fig. A; Boulenger, F. B. I. 1890, p. 319, and Cat. Sn. Brit. Mus. ii, 1894, p. 240; Wall, J. Bombay N. H. Sxxix, 1923, p. 628, and Rec. Ind. Mus. xxv, 1923, p. 311.

Rostral in contact with and partly separating the prefrontals; no internasals; no loreal, the posterior nasal

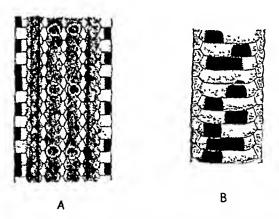


Fig. 80.—Oligodon brevicauda. (B.M. 61.12.30.84.)

A. Dorsal and B. Ventral pattern.

touching the preocular; 7 supralabials, 3rd and 4th touching the eye; 1 anterior temporal. Scales in 15 rows. V. 158-173, not angulate laterally; C. 25-29.

Hemipenis not known.

Brown above with a light vertebral stripe, bordered on each side by a dark brown or black stripe involving 2 scale-rows; these stripes may or may not be marked with paired series of spots or short bars on the anterior part of the body; a narrow dark lateral stripe on each side of scale row 3; brownish or whitish below (red in life) with large quadrangular or transverse black spots; head with a crescentic band in front, an oblique

temporal stripe and a large dark nuchal patch usually con necting hy a longitudinal stripe with the prefrontal mark

Total length 2 500 tail 55 mm Range Western Ghats south of the Gon Gap (Nilgin Anaimalai and Travaneore Hills)

156 Oligodon erythrogaster

Oligodon erythrogaster Boulenger 1907 Rec Ind Min. i. p 218 Vagarket Vepal 6 000 feet: Lendon: Wall J Bombay V H S xix 1910 p 1000 fg, and xx: 1913 p 639 and xx:x 1923 p 629 and Rec Ind Mus xxv 1923 p 321; Shaw & Shebboare J Darjeeling N H S IV 1929 p 28 Shaw & others ib d. kry 1940 p 141

No loreal the prefrontal in contact with the 2nd labial 7 supralahuals 3rd and 4th touching the eye 6th not reaching the labial border in the position of a lower anterior temporal Scales in 17 rowa V 178-186 (163 Wall) not angulate laterally C 42-59

Hemipenis extending to the 29th caudal plate not forked at the extreme base there is a short area with thick smooth longitudinal folds the remainder has prominent flounces transversely arranged they are finest at the tip

Purplish grey above the acales edged with black a light brown vertebral stripe bordered on either aide by a greyish brown one of equal width these two stripes being edged with hlack another stripe similarly coloured on scale rows 3 and 3 other narrower black stripes 1 above it and 2 below whitish below (red in life) the outer margina of the ventrals and aubeaudala with black apots more or less confluent with one another head as in hamptons

Total length 2 450 tail 75 mm Range Eastern Himalayas Nagorkote Nepal Tindharis Darjeeling district | known only from a few apecimens

157 Oligodon catenata

Calamaria cotenaia Blyth, 1854 J A B Bengal xxiii, p 287 (Assam 579e lost) Schlar ib d. lx, 1811 p 233 Bonlenger F B I 1850 p 282—Ol godon cuttasta 8m th Rec Ind.

F D 1 1890 P 232 -- Or group concernation of the property of t

No internasals the rostral m contact with and just separating

the anterior end of the prefrontals which are very large; no loreal, the prefrontal in contact with the second labial; 6 supralabials, 3rd and 4th touching the eye; 1 anterior temporal. Scales in 13 rows. V. 3 186-196, \$\times\$ 179-212, not angulate laterally; C. 34-43.

Hemipenis extending to the 7th caudal plate, not forked; it has numerous longitudinal folds which bear small spines; proximally there is a small area which is entirely spinose.

Two colour forms.

I. Purplish-grey or brown above, with four dark brown longitudinal stripes, the median pair separated by a yellowish-brown vertebral stripe, the outer pair on scale rows 2 and 3; yellowish below (red in life), almost every other ventral shield with a black square spot at the outer end; tail almost immaculate; head markings as in hamptoni (herberti).

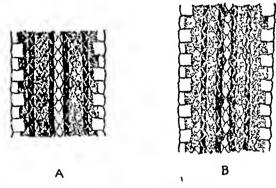


Fig. 81.—Dorsal patterns of Oligodon catenata.

A. Var. I. B. Var. II.

II. Like I, but the vertebral stripe formed by a concatenation of lozenge-shaped or sausage-shaped, black-edged spots, which may fuse with one another and form an irregular stripe (catenata: eberhardti).

Total length: 3 565, tail 75; \$ 540, tail 68 mm.

A larger female measures 580 mm, in total length, tail incomplete.

Range. Burma (Mogok, Bhamo, Kachin Hills; Nam Tamai Valley near the Tibetan border); Tong-King; Southern

China; Cambodia (fide Werner).

Form I is found chiefly in Burma, but Bourret, 1939, records it from Tong-King. All the specimens that I have seen from Tong-King belong to Form II. In Upper Burma, north of the Triangle, and in the Bhamo district both forms occur; some individuals combine both patterns, having I on the fore-part of the body, II on the hinder part, or vice versa.

I have not seen Werner's specimen said to have come from Cambodia Its description agrees with that of Form II. (V.

165) Blyth's description of catenata agrees so completely with this species that I have no heutation in applying his name to it.

158 Ollgodon medongalii

Oligodon medongalli Wall, 1965 J Bombay N H S xvi, p 251, fig (Sandowa) [not Sandarang] Burma type lost) and xxix 1923 p 626 and Rec Ind. Mas. xxv, 1923 p 308

No loreal, the prefrontal in contact with the 2nd labeal, 7 supralabials 3rd and 4th touching the eye Scales in 13

rows W 200 not angulate lateralls . C 39

Dusky black with a reddish brown vertebral stripe from nape to tip of tail, it is edged with small black apots most evident anteriorly, a black line on scale rows 2 and 3, ending at the vent tail with 2 black bars, one at the base the other near the tip, head blackish with sellow markings on the snout and lips , uspe with an incomplete collar , black below mottled with fawn

The type and only known specimen cannot now be found The above description is compiled from Wall's original

&ccount.

159 Oligodon dorsalis

Elby decade Gray & Hardwick, 1834, III, Ind. Zool, Is, Elby decade Gray & Hardwick, 1834, III, Ind. Zool, Is, Children Call, Children C. London, —Olymbro devalute 1844, Phys. Rev. B 1844, 1859, 1854 Rec Ind. Mus zha, 1940 p 482.

Seven supralahala, 3rd and 4th touching the eye . 1 anterior temporal Scales in 15 rows V 162-188, not angulate laterally C 27-51

Hemipenis extending to the 20th caudal plate, forked at the 14tb, the greater part of the organ has atrongly developed flounces obliquely arranged, at the base are a few large

Dark brown to purplish above with a light vertebral stripe edged with black or with black spots, another black stripe occupies acale rows 2 and 3, lower parts black and yellow, the black predominating on the belly the yellow on the tail; head dark brown with indications of the typical markings; tail with 2 or 3 large black spota above, the first on the base, the others near the tip, below orange in life

Total length: 3 415, tail 80 mm.

Range. Assam (Garo, Naga and Khasi Hills): Bengal (Chittagong Hills): Burma, (N'Changyang in the Triangle, Chin Hills, Mausi, Katha district).

160. Oligodon hamptoni.

Oligodon hamptoni Boulenger, 1918, P.Z.S. p. 9, fig. (Mogok, Burma: London); Wall, J. Bombay N.H.S. xxx, 1925, p. 814.

No internasals, the rostral in contact with, and partly separating, the prefrontals; loreal very small or absent; 5

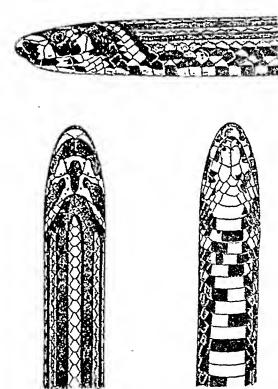


Fig. 82.—Oligodon hamptoni. (After Boulenger, P. Z. S. 1918.)

supralabials, 2nd and 3rd touching the eye; 1 anterior temporal. Scales in 15 rows. V. 160-175, angulate laterally; C. 30-32.

Hemipenis extending to the 11th caudal plate, not forked; the distal half is flounced, the folds being partly connected to

form large calvees, the tips of which have small spines; the proximal area is spinore, the spines being comparatively stont

and of almost uniform size throughout

A broad vellow vertebral stripe, from the nape to the end of the tail, between a pair of reddish-brown, black-edged dorsal stripes of about the same width; sides blush grey, with two narrower dark brown stripes, the lower interrupted; head dark brown, with yellowish, crescentic markings as in the figure, namely, one across the anout, another on the top of the head, and two oblique ones behind which are interrupted on the raid line, belly red, with black bara occupying a whole ventral shield or interrupted and alternating; lower surface of tail uniform red

Total length & 590, tail 75 mm

Range Upper Burma Mogok (Ruby Mmes); Smlangaba (Bhamo district)

161 Oligodon lacrojal.

Oliyodon torroun angel & Bourret, 1933, Bull Soc. Zool, Fr lyun p 138 (Chara, Tong King, Paris), Bourret, Sony Indo-Chine, 1936, p 254, fig head.

Like Amptons in general scalation Loreal always absent-V 162-178, not angulate laterally, C. 25+ to 33+, s good deal of the tail meaning in the two examples examined by me.

Dark purplish brown above, with a vertebral series of light (orange in life) rounded or transversely oval, black-edged spots, 11 or 12 + 2 or 3 in number, and with 4 indistinct, blackish, longitudinal stripes, the median pair bordering the vertebral series of scales, the outer on scale row 3, each vertebral spot occupies one scale and the adjacent edges of those that surround it, coral red below with black bars as in hamploss, head brown above, with light [1 red or pink) markings, namely, one covering the snort, a wide-angled A shaped mark across the head behind the eyes and another and much narrower one behind it

Total length 2 700, tail 80 mm, meomplete. Known only from the type locality

Genus CALAMARIA.

Calemaria Bon, 1826 Issa p. 831 and 1827 pp. 519 539 (type Imper? Boulenger, P. B. I. 1890, p. 281, and Cat. Sz. Brit. Mus. ii, 1894, p. 130 Changula Gay, 1835 Ill. Ind Zool u, pl 86, hg 3 (type alternate) Mericus Seackeub xi 12 1929 p 30
Typklocalamus Gunther, 1872, P Z, S p 595 (type gracultume)

Maxillary teeth 8-11, equal, strongly curved. Head not, or scarcely, distinct from neck, eye moderate, with round pupil; nostril pierced in a very small nasal; no loreal; no internasals; no temporals, the parietals in contact with the labials; preocular present or absent. Body cylindrical; scales smooth, in 13 rows throughout, without apical pits; ventrals rounded; tail short, subcaudals paired.

A Malayan genus of some 60 or 70 species, three of which

extend their range into the Indo-Chinese region.

Small snakes of gentle disposition, usually found concealed

under stones or fallen trees.

By Opinion 92, Oct. 1926 (Intern. Commission, Zoological Nomenclature), the generic name Calamaria was standardised, with Coluber calamarius Linn. as type. Andersson, however, in 1899 (Bihang Sv. Vet. Akad. xxiv (4), p. 8) has shown that the Coluber calamarius of Linnaus is an entirely different

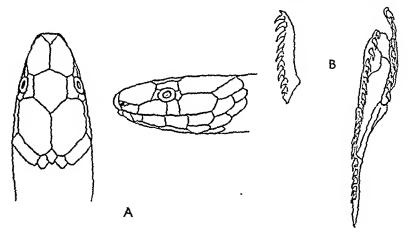


Fig. 83.—A. Head of Calamaria pavimentata. (After Boulenger, F. B. I. 1890.) B. Maxilla and palato-maxillary arch of C. uniformis.

snake, namely, Oligodon templetoni, a species peculiar to Ceylon. An examination of Boie's paper shows that the snake which he made the type of his genus was an undoubted Calamaria, which he believed conspecific with the Linnean species, and he (presumably) renamed it Calamaria linnæi to avoid tautonymy. The type of Calamaria therefore is C. linnæi, the snake Boie had before him, and not the Linnæan species, with which he thought it identical.

Key to the Species.

162 Calamaria pavimentata.

Calonara o gramenosta Dum & Bab 1824, Erp Gen. vn.p. 714/dava Farni) dan, Jeon Cén Ophol. Lev 10,91 4, fig. 9. Sonder, F B II 1894 p. 262, and Cat. 8a. Brat. Mus. n. 1894, p. 345; Prater J Bornbay N H S Xxxv, 1919, p. 684, Wal, jud. xxxx, 1924, p. 865. Pope, Rept China, 1935, p. 305; Angel Bull Mus. Heir Nat Para (23), 1929, p. 78.

Calamaria quadrimaculata Dum, & Bib 1854, Erp Gen. vu, p 73 (Java Paris)

Columnia remense Günther, 1884, Rept Brit Ind p 196, (S Lace French Indo-Chuna London)

Calamana paramentata bancenne Bourret, 1934, Bull Gen.

Inst Pub Hanoi, May p 174, and Serp Indo-Chine, 1936, p 272 (Bana, Annam Paris) Colomorio povimentalo conomensis Bourret, 1937, Bull. Gen. Inst Pub Hanos, May, p 32 (Dong Tam-ve, Quang Tri Prov. 1

Pane)

Rostral much broader than high, well visible from above, the portion visible 1-1 as long as the interprefrontal suture; frontal longer than broad, as long as, or longer than, its distance from the end of the snout, about twice as broad as the supraoculars , 1 pre and 1 postocular , 4 supralabials, 2nd and 4th largest, 2nd and 3rd touching the eye, anterior genials longer than the posterior V 152-186 (196 in the type of C. p annameness), C o 19-25, Q 10-14, A 1; tail tapering to a point

Hemipenis extending to the 7th or 8th caudal plate, deeply forked and devoid of spines, it is smooth proximal to the point of forking but caljculate beyond; the calyces are pocket-like in shape and uniform m size; the edges are not acalloped, a broad longitudinal fold extends from the point of forking to the tip of the organ , the lips of the sulcus are

amooth and moderately prominent (Pope)

Reddish brown above, with dark longitudinal lines or series of spots, a broad dark bar on the napo edged behind, and usually also in front, with yellow, belly uniform yellow, or the ventrals edged with brown, two yellow spots at the base of the tail and two near the tip, in C. p bancensis there is a dark median line along the belly and tail. The above description applies to specimens from the Indo Chinese region

Total length 3 320, tail 15 mm
Range Widely distributed throughout the Indo-Chinese region, but nowhere common, extending in the north-west as far as the Tura and Chin Hills in Assam . Southern China , the Malay Peninsula , Java Found in hilly country

163 Calamaria uniformis.

Colomora promentate var uniforms Smith, 1921, P. Z. S p 428 (Langbian Peaks, S. Annara, 6,000 feet London)

Like paramentate but differing in the higher caudal count,

the hemipenis and coloration. V. 3 143-149, \$\mathcal{Q}\$ 166-167; C. 30-34, 918-19 (10 examples).

Hemipenis forked near the extreme tip, and without the

longitudinal folds, but otherwise as in pavimentala.

Uniform dark brown above, yellow below, the ventrals with or without dark brown spots mesially arranged; a median series underneath the tail always present.

Total length: 3315, tail 34; \$350, tail 30 mm.

Range. Known only from the type locality.

164. Calamaria septentrionalis.

Calamaria septentrionalis Boulenger, 1890, P. Z. S. p. 34 (Kiokiang and Hong-kong: London), and Cat. Sn. Brit. Mus. ii, 1894, p. 349; Parker, Ann. Mag. Nat. Hist. (9) xv, 1925, p. 25; Pope, Rept. China, 1935, p. 306, pl. xii, figs. K-P; Bourret, Serp. Indo Chine, 1936, p. 272.

Snout shorter and more broadly rounded than in pavimentata; rostral only just visible from above; frontal as broad as long, not longer than its distance from the end of the snout: tail blunt, V. 162-176: C. & 15-18, Q 8-10: A. 1 (for specimens from the Indo-Chinese region).

Hemipenis as in pavimentata.

Blackish-brown above, with three longitudinal series of small black spots; each scale of the outer row with a whitish spot; a yellow nuchal collar interrupted in the middle, and a pair of yellow spots at the base of the tail; lower parts uniform coral-red, with a black line along the middle of the tail.

Total length: 320, tail 15 mm.

Range. Tong-King (Thai-Mien; Cao-Bang); Hong Kong; Southern China.

Genus AHÆTULLA.

BRONZE BACKS

Ahætulla Link, 1807, Beschr. Nat. Samml. Rostock, p. 73 (type

Ahætulla Link, 1807, Beschr. Nat. Samml. Rostock, p. 73 (type fasciata = Coluber ahætulla Linn.; in part).

Dendrophis Fitzinger, 1826, Neue Class, Rept. pp. 29, 30, and Isis, 1827, p. 519 (type Coluber ahætulla Linn., and in Syst. Rept, 1843, p. 27, picta Boie); Boulenger, F. B. I. 1890, p. 296, and Cat. Sn. Brit. Mus. ii, 1894, p. 77; Wall, Rec. Ind. Mus. xxii, 1921, p. 151, and J. Bombay N. H. S. xxix, 1923, p. 623; Meise & Hennig, Zool. Anz. Leipzig, xcix, 1932, p. 273, and cix, 1935, p. 138; Stejneger, Copein, 1933, p. 202; Mertens, Arch. Naturg. Leipzig, n.f. iii, 1934, p. 187.

Dendrelaphis Boulenger, 1890, F. B. I. p. 339 (type caudolineatus), and Cat. Sn. Brit. Mus. ii, 1894, p. 87; Mertens, Arch. Naturg. Leipzig, iii, (2) 1934, p. 187; Wall, Rec. Ind. Mus. xxii, 1921, p. 151.

p. 151.

Tachyophis (non Rochebrune 1884) Mertens, 1934, Arch. Naturg. Berlin, iii, (2) p. 189 (type Coluber pictus).

Maxillary teeth 20 to 34, the posterior 3 or 4 slightly larger or slightly smaller than the others; head distinct from neck;

eye large with round pupil; loreal region more or less concave Body elongate, scales smooth, in 13 or 15 rows, all except the outer row narrow, with single apleal pits, disposed obliquely, the vertebrals more or less enlarged; ventrals with a suturnlike lateral keel and a notch on each side, corresponding to the keel, tail long, subcaudals paired, keeled like the ventrals Hypapophyses absent on the posterior dorsal vertebra, represented by a low keel

Common characters, unless otherwise stated -Nostril between two nasala rostral broader than high; frontal more or fess bell shaped, as long as, or a little longer than, its distance from the end of the anout . loreal clongate, twice as long as high, 1 pre and 2 postoculars, anterior pair of genuals shorter than the posterior, vertebral scales enlarged, originating on the neck by the fusion of two scales

Range The Oriental Region to Australia

With the exception of grandoculus and condolineolatus all the Oriental species have a colour character in common The interstitial skin is black or blackish, this colour extending on



Fig. \$4 -Akatulla akatullo Nazilla and mandible

to the margins of the dorsal scales, except those of the outer tow, in addition the outer margin of each scale, or alternate scale, has a light blue apot These markings are most evident on the anterior half of the body, and can be seen only when the body is inflated The black edging to the acales is variable in amount, and in some aperies can be seen at all times

The epitricheal scales are easily rubbed off in preserved specimens, the scales then being of a blush green coloration This alteration of the cofour has led to occasional inaccuracies

The Bronze Backs are a group of arboreal anakes, many of them of strikingly beautiful coloration. They live entirely among bushes and on trees, only descending to the ground to search for food. In their native haunts they can move with smaring rapidity Their prev, which they hunt by day, consists chiefly of frogs and lizards, but they have been known to est toads and sometimes maccia. That they can "fly" or plane as can Chrysopeles orange, has not yet been definitely established From 3 to 5 clongated eggs are laid at a time. development of the Found may have commenced before

Meise & Hennig (1932) have recently reviewed the genus, reducing the number of species in it to eight, with numerous subspecies. After comparing their opinions with the Oriental material at my disposal, I find myself unable to agree with them on many points. The affinities of the species must, I believe, be sought for in the comparative enlargement of the vertehral scales rather than in the teeth; the difficulty of adequately expressing that enlargement in measurable terms, prevents its use as a major key character.

The genus is undoubtedly one of the most difficult of all the Oriental groups. Boulenger (1896), Wall (1921), Meise & Hennig (1932) and Mertens (1933) have in turn revised it, and in turn have disagreed with one another, particularly with regard to the status of the forms related to aheatulla.

The Coluber ahæiulla of Linnæus, as shown by Andersson (1899), is a composite of two species, namely, Dendrophis pictus (Asiatie) and Leptophis liocercus (S. American), sensu Boulenger. Lacépède, în 1789, tied the name ahætulla to the Asiatic specimen. He did not name his "Le Boiga" Coluber boiga as is generally stated, but Coluber ahætulla. This is clearly shewn in the synonymy of Le Boiga on p. 223 and in his Index on p. 507, col. 1. The name Le Boiga, as with the name La Sombre which follows it on p. 229 and many others, was used in a trivial sense. There is in consequence no such name as Coluber boiga Lacépède. Link in 1807 removed Coluber ahætulla from the genus Coluber of Linnæus and, including with it C. mycterizans, made a new genus which he called Ahætulla. To avoid tautonymy he renamed the ahætulla of Linnæus fasciata. In raising the Linnæan specific name to generic rank, he was following the usual practice of his time, and that such was his intention is clearly shown in his definition of the genus. His reference to the boiga of Lacepède shows also that he had in mind the Asiatic snake and not the South American one. Ahatulla fasciata, therefore, the Dendrophis pictus of Boic, based on the Coluber ahætulla (in part) of Linnæus, becomes type of the genus Ahætulla by absolute tautonymy (Art. 30, d).

Key to the Species.

- I. Last 3 or 4 maxillary teeth largerstouter and usually longer-than tho
- A. Scales in 15 rows. a. Vertebral scales not strongly enlarged, not broader at mid-body than the scales of the outer row. Diamoter of the eye not more than its distance from the nostril; a black temporal stripe ahætulla, p. 242. YOL. III.

COLUBEIDE

Diameter of the eye more than its dutance from the nostril, no black temporal stripe grandoculus, p 245 b Vertebral scales strongly enlarged, broader at mid body than the

scales of the outer row A single lorest, V 186-211 no black flank atripe

Two loresls , V 154 176

B Scales m 13 rows Vertebral scales not strongly enlarged, the posterior margin rounded T 1+2

Vertebral scales atrongly enlarged, the posterior margin truncate, T 1+1 II Posterior manilary teeth shorter than

the others A. Scales in 15 rows

B Scales in 13 rows Dorsum with black longitudinal lines

Two labuals touching the eye One long labual touching the eye

trustus, p. 248 subocularis, p. 249 [caudolineata] p 250

eyanochlorus, p. 244

caudolingolata, p. 247

bifrenalus, p 246

gores, p 246

165 Ahastulla ahætulla

PAINTED BRONZE BACK Coluber absetulla Linn. 1758 Syst Nat Ed. 10 p 225 (in part). Lacepede Host Nat Seep u 1789 (1) pp 103 (ii) 223 & 507 Andersson, Kungi Sven. Vet Akad Stockholm, xxiv, 1899 (+) 6 p 22

(17) 0 p 22 Culture pricise Gmain, 1783, 89st kat 1, p 1116 (no type loc. given)—Dendrophie pectus Bose Las, 1827, p 230 (favr), Euclimper F B I 1800 p 337 and Cat 86. Bert Mus it, 1891 p 78 (on part) Wall J Sombay N H. S. sviu, 1907, p 183 and 2x, 1909 10 pp 327, 788 and 8xc, 1918, p 503, and Ros Int. Mus xxxx, 1921, p 153, Smuth, J Nat Hat Son Saum 1 1912 and Soc Sum i, 1914 p 26, Shaw & others, J Bongal N H S

xiv, 1940 p 108 Akertulla fascuska Lenk, 1897 Besche Nat Sammi Rostock, p 74

(Based on Bechstein, Nat Amph in, 1801, p 425) Coluber decoras Shaw, 1802 Gen Zool m. p 538 (type loc

Aherulis bellis Hard & Grey, 1834 III Ind Zool u. pl 80 fig 2 (Sungapore)
Dendrophis preta var andomanensis Andorson, 1871 P Z S

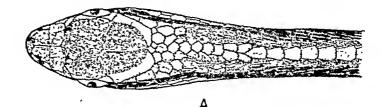
Dendrophus prosrchus Wall, 1903 J Bombay N H S xix,

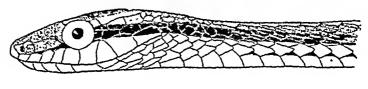
pp 347 and 1910 p 827, fag (Dibrugarh Assam London)
Akatulis bogo Lochran, 1930 Pro. US Nat Mus Iveru (11), p 26 - Dendrophie boiga Pope Rept China, 1935 p 279 Denderphis pictus nymemensus Bourret 1935 Bull Gen Instr Pub Ranos May p 4 (Ngan son, Tong King Paris) and Serp

Indo-Chino 1936 n, p 231 (not seen by me) Maxillary teeth 23 to 23, posterior largest , snout broadly rounded, eye as long as its distance from the nostril, inter nasals usually a little shorter than the prefrontals; temporals 1+2 or 2+2, rarely 1+1, 9, rarely 8, supralabials, 4th just touching, 5th and 6th below the eye, vertebral scales enlarged. variable in breadth, at mid body not broader than the outer

row of scales, the posterior margin obtusely pointed or rounded, or truncate, rarely concave. Scales in 15:15:11 or 9 rows. V. 167-200; C. 127-164; A. 1 or 2.

Hemipenis undivided, very long, extending to the 24th caudal plate; it is longitudinally plicate, the folds being provided with minute spines except at the extreme base where there are a few larger and coarser ones; sulcus lips very





В

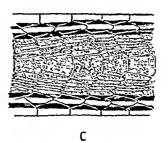


Fig. 85.—Ahætulla ahætulla.

A. Dorsal. B. Lateral, view of head. C. Dorsal pattern.

prominent; at about the middle of the organ and extending half-way across it are two transverse folds.

Two races, the typical one with two colour forms.

I. Ahætulla a. ahætulla.

1. Bronze-brown above; a yellow or cream-coloured flank stripe along scale-rows I and 2, bordered below by a dark, usually black, stripe, almost as broad, and with or without

a narrower one above lower parts creamy white or yellowish, or greenish or bluish a black stripe along the side of the head, strong on the temple and pessing on to the neck, where it breaks up into oblique bars, upper lip and lower jaw vellow or white

Total length of 1100 tail 365, Q 1220 tail 400 mm

Range The whole of the Indo Chinese region from Rengal and the Eastern Humalavas to bouthern China Common in many places both in the bills and in the plains Ita occurrence in the Indian Peninsula is open to doubt (See Wall, 1910

and 1923 1 2 Like the typical form but with the markings reduced. the yellow flank stripe absent or merely indicated and the

black one reduced to spots edging the scales. Rance Southern India

II thatella a andamaneness Bronzy clive or greenish sometimes reddish, above all the dorsals and the outer margins of the ventrals heavily edged with black lower parts greenish yellow, a black stripe slong the aide of the head passing on to the neck. A very distinct form possibly a race of the Malayan formore and not of akreella

Range The Andamana

Except that it has the anal undivided I cannot find any character by which to distinguish Walls progredus from aketells as an occasional aberration an undivided anal occurs

also in tristic gores and cyanochlorus

The Painted Bronse back is fairly common throughout the greater part of the Indo-Chinese region inhabiting the plants and hilly districts at low situides. I found it one of the commonest makes in the neighbourhood of Bangkok, frequenting the low brushwood in the fields the plantations and the compounds in the town, loving the sunshine and on the Prove at all hours of the day In dull weather it was less active Cursously enough for a creature of such marked erboreal habits its diet seemed to consist entirely of froce manly the common species of the rice fields. I never found anything else in the stomachs of those I examined and when in captivity they lived entirely upon them refusing all other kinds of food. In disposition they were shy and always resented being handled.

166 Ahminia eyanochioris

Dendrophus puenus var egunachlorus Wall, 19°1 Rec. Ind. Mut-xim, p. 135 (Mergin, Tenanserium London) Akerula comechious, Smith, Ree Ind. Mus. xl: 1940 p 482. Desdrophes perms, Boulenger F B L, and Cat. (m part)

Akerula formosa, Sm th, Bull Rames Mus. to 5, 1930, p. 53

Maxillary teeth 21 to 24, posterior largest; snout broader and squarer than in ahatulla; eye as long as its distance from the middle, or the anterior border, of the nostril; internasals as long as, or a little longer than, the prefrontals; temporals 1+2 or 2+2; 9, rarely 8 or 10, supralabials, 4th just touching, 5th and 6th below the eye; vertebrals strongly enlarged, at mid-body broader than the outer row of scales, the posterior margin truncate or concave. Scales in 15:15:11 or 9 rows. V. 186-211; C. 135-159; A. 2.

Hemipenis undivided, very long, extending to the 21st caudal plate; it is longitudinally plicate, the folds being linked to each other at regular intervals so as to enclose diamondshaped spaces (calyces); they are provided with minute spines; the basal portion of the organ is sharply marked off from the calyculate area by an oblique fold of tissue and has only large coarse spines.

Bronzy-olive above, the scales black-edged; ventrals and outer scales-rows pale greenish or yellowish; usually no black flank stripe; a broad black temporal stripe, extending on to the neck and forebody, where it may be broken up into spots;

lips and lower jaw yellowish.

Total length: \$\times 1330, tail 405 mm.

Range. Bengal (Darjeeling district); Assam north to the Thandaung Hills; Upper Burma (Htingnan in the Triangle); Tenasserim; Siam in the north-west; the Andaman and Nicobar Islands.

A. cyanochloris was described by Wall as a colour variety of ahætulla, the distribution of the two forms in Indo-China being almost the same. On the characters set forth in the Key, I have regarded it as a species. There is, however, considerable variation in the degree of enlargement of the vertebral scales, and the coloration is not quite constant. More material may prove ahatulla to be a very variable species, and Wall's opinion the correct one.

Another near relative of cyanochloris is the Malayan formosa to which it bears a strong resemblance. Typical formosa from the Malay Peninsula as far north as lat. 9°, has, however, 30 to 34 maxillary teeth.

167. Ahætulla grandoculis.

Dendrophis grandoculis Boulenger, 1890, F. B. I. p. 337 (Tinnevolly Hills & Coonoor Ghat, S. India: London), and Cat. Sn. Brit. Mus. ii, 1894, p. 84, pl. iv, fig. 2; Ferguson, J. Bombay N. H. S. x, p. 72; Wall, ibid. xxix, 1923, p. 624, and Rec. Ind. Mus. xxii, 1921, p. 156.

Dendrophis formosus grandoculis, Meise & Hennig, Zool. Anz. Leipzig, xcix, 1932, 11/12, p. 286.

Maxillary teeth 31 to 33, posterior largest; snout broader and squarer than in picta; eye as long as, or a little longer than, its distance from the anterior border of the nostril; internasals as long as the prefrontals; temporals 1+2 or 2+2; 9 supralabials, 4th just touching, 5th and 6th below the eye; vertebral scales feebly enlarged, at mid body not broader than the outer row of scales, the posterior margin rounded or obtusely pointed Scales in 15 15 11 or 9 rows V. 167-189; C 117-124; A 2

Ohve-brown above, with small, black, irregularly distributed blotches, eye bordered with whitish, no lateral stripes on the body , no black temporal stripo , lower parts olive, darker behind than in front, with or without small black apots on the sides, 3 black lines along the tail, one on each side and one below

Total length Q 1280, tail 350 mm

Range The Western Chats, south of lat 15° (Travancore, Tinnevelly, Nilgar, Hills, Wynasd)

168 Absetulia gorei.

Dendrophie gore Wall, 1910, J Bombay N H. S xix, p 829, pl. - fige 1-3 (Jupur Naga Hills, Assam - London), Annantale, Rec Ind Hos via, 1912 p 48; Wall, ibid. xxx, 1921, p 183, and J Bombay N H 8 xxx, 1915, p 639, and xxx. p 155, 1923, p 623,

1973, p 623, Dendelapha biorectus Wall, 1908, J Bornbay N H S xvii, p 273, pt. — figs 1-5 (Sadiya, Assam: London) and xxix, 1923, p 625, and Rec Ind. Mos. xxii, 1921, p 159

Closely allied to cycnochlors Maxillary teeth 22 to 25, posterior largest, snout broadly rounded; eye as long as its distance from the anterior border of the mostril; internasals shorter than the prefrontsis, temporals 14142, 8, rarely 9, supralabals, normally 4th and 5th touching the eye; vertebral scales strongly enlarged, at mid-body broader than the outer row of scales, the posterior margin truncate or concave Scales in 13 13:11 or 9 rows V 187-199, C 139-154;

Hempens as in triels.

Bronze-brown above, greenah or greyish below, a more or less distinct yellowish stripe along scale rows 1 and 2, a black stripe along each side of the head, extending on to the neck. where it breaks up into vertical bars, lips and chin yellowish.

Total length · \$2 900, tail 320 mm. Range The Eastern Humslayas (Darrechng); Assam north

to the Abor country; Burms (Toungys), Tong King
The type of biloreaus cannot now be found, except that it has two loreal shields, it appears to be identical with the

169 Ahætulla bifrenalis.

Dendrophus bifrenalis Boulenger, 1990 F B I, p 353 (Cerlon; London), and Cat Su. Erst Mus ii 1894, p 80 pl 4 fig. 1 Wall, Rec. Ind. Most in 1894, p 80 pl 4 fig. 1 Wall, Rec. Ind. Mos Ex., 1921, p. 158, and Sn. Ceylon, 1921, p. 215 Sp. 444 p 215, fig. 44, and J Bombay h H. E xxxx, 1923, p 524.

Maxillary teeth 20 to 25, posterior largest; snout broadly rounded; eye as long as its distance from the centre or the anterior border of the nostril; internasals shorter than the prefrontals; 2 loreals, one behind the other; temporals 1+2 or 2+2; 9 supralabials, 4th just touching, 5th and 6th below the eye; vertebrals strongly enlarged, broader than the outer row of scales at mid-body, the posterior margin truncate or concave. Scales in 15:15:11 rows. V. 154-176; C. 144-175; A. 2.

Bronze-brown above; a greenish-yellow line along the outer row of seales, sometimes edged with black spots; a black stripe along the side of the head, strong on the temple, and passing on to the neck, where it breaks up into oblique bars; ventrals and subcaudals between the lateral keels greenishyellow, brownish or bluish outside the keels; upper lip and chin yellowish.

Total length: 2 1030, tail 380 mm.

Range. Ceylon; Southern India (Trivandrum, Travaneore).

170. Ahætulia caudolineolata.

Dendrophis caudolineolatus Günther, 1869, P. Z. S. p. 506, pl. xl, fig. 1 (Ceylon: London); Boulenger, F. B. I. 1890, p. 339, and Cat. Sn. Brit. Mus. ii, 1894, p. 85; Wall, Rec. Ind. Mus. xxii, 1921, p. 151, and Sn. Ceylon, 1921, p. 218, and J. Bombay N. H. S. xxix, 1923, p. 623.

Dendrophis gregorii Haly, 1888, Taprobanian, iii, p. 51 (Ceylon).

Dendrophis effrenis Worner, 1909, Jahrb. Hamburg Wiss. Anst. xxvi, p. 221 (Colombo, Ceylon: Hamburg); Wall, Sn. Ceylon, 1921, p. 219, and J. Bombay N. H. S. xxix, 1923, p. 623.

Maxillary teeth 29 to 32, posterior largest; snout broadly rounded; eye as long as its distance from the anterior border of the nostril; internasals shorter than the prefrontals; temporals 1+2; 8 supralabials, 4th and 5th touching the eye; vertebrals feebly enlarged, at mid-body narrower than the outer row of seales, the posterior margin rounded or truncate. Scales in 13:13:9 rows. V. 149-164; C. 119-128: A. 2.

Hemipenis as in tristis.

Bronze-olive above, anteriorly with oblique, narrow, black streaks; tail with 4, more or less distinct, black longitudinal lines, two on each side; a narrow black temporal streak; upper lip and lower jaw yellowish; belly pale greenish or greyish.

Total length: 3 650, tail 235 mm. (Wall, 870 mm. Q.) Range. Ceylon; Southern India (Ramnad, Travaneore).

A rare snake, found only in the hills.

171 Abstulia tristis.

COMMON INDIAN BRONZE BACK

Russell Ind Serp 4, 1798, p 38, pl 31, Hydershed , and u. p 29, pl 25, Bombay, and u. p 30, pl 26, Tranqueber

Coluber tratta Dauchn, 1803, Hat Nat Rept vi p 430 (based on Russells pl 31)—Dendrelophie trusts Boulonger, Cat Sn. Brit Mus n. 1891, p 88, Wall, J Bombay N H S xix, 1905-10, pp 347 and 776, col pl. xii and xxix, 1923 p 825, and Rec Ind Mus xxu, 1921, p 160 and Sn Ceylon, 1921,

p 221, fig , Frater, J Bombay N R S xxx, 1924, p 170, Shaw & others J Bengal N H S xxx, 1940, p 111 Leptophus manone Bell, 1825, Zool Journ 11, p 329 (based on Russell n, pl. 25)

Dendrophie manior Bose 1827, Isia, p. 542 (based on Russell, n.

Dendrophie chairceans Boso, 1877, Isia p 541 (based on Russell, II. pl 261

Chrysopelea boses A Smith, 1836, Mag Zool Bot p 1441 Doylon)
---Dendrophie boses Cantor, P L S 1839, p 53 (drawing in Bodiesan Lab 1 Dendrophie Aslena Werner, 1892, Zool, Ans xvi, p 8 (Ceylon

Dendrelophie truste var toprobanenses Wall 1921, Sp. Ceylon,

P 221 (Ceylon) Dendrophus pictus, Boulenger, P B I 1850, p \$37 (m part)

blandlary teeth 17 to 22, posterior usually smallest, should

broadly rounded , eye as long as its distance from the nostril . internasals usually a little shorter than the prefrontals. temporals 2+2, 9 supralabials, 5th and 6th touching the eye, vertebral scales feelily enlarged, narrower than the outer scales, the poeterior margin rounded Scales in 15 15 11 or 9 rows V 163-197, C 108-145, A 2

Remipents undivided, extending to the 8th caudal plate; at about the middle of the organ and beside the sulcus there is a prominent tongue of tissue, from which two sinuous folds extend forwards, the area dustal to the folds is calyculate, that proximal to it apinose, except the base of the organ.

which is plicate

Bronze brown or purphsh brown above, light grevish, greensh or yellowish below a more or less distinct huff flank stripe along the outer two scale rows, edged or spotted with black, an indistinct black temporal stripe extending on to the neck, where it may break up into vertical bars , vertebral scales on neck and forebody sometimes Jellow, upper lip yellow, the eye often margined with the same colour

Total length of 1050, tail 325 , Q 1300, tail 390 mm

Range Ceylon and Penmaular India as far as Sind in the north west and Durgeeling in the north-east. For its more exact distribution I quote Wall (1910) It is very common in Ceylon and in S India about Trichinopoly and Cannanore and in the Western Ghats in the plains and hills of Travancore,

and about Matheran near Bombay; it is uncommon in the plains to the north of the Tapti river, and does not appear to occur at all in the Indus Basin except near the mouth of the river. Blanford, collecting at Ajmere for 3 years, failed to procure a specimen; the Ganges Valley appears to be outside its limits except at the eastern part near the Delta; it has not been recorded from Central India or the Central Provinces; it is quite common in the Eastern Himalayas in the vicinity of Darjeeling at between 2,500 and 5,000 feet altitude.

Wall (1910) has given a good account of the habits of this eommon Indian snake. Like the other Oriental members of the genus, it is shy and timid in disposition, and does not bite readily when handled. It feeds mainly on lizards and frogs. He says: "It is truly astonishing with what speed it can ascend an almost bare tree trunk from the ground, and dis-

appear in the branches above."

172. Ahætulla subocularis.

Dendrophis subocularis Boulenger, 1888, Ann. Mus. Civ. Genova, (2) vi, p. 600, pl. vi, fig. 2 (Bhamo, Upper Burma: London and Genoa), and F. B. I. 1890, p. 338.—Dendrelaphis subocularis, Boulenger, Cat. Sn. Brit. Mus. ii, 1894, p. 89; Smith, J. Bombay N. H. S. xxiii, 1915, p. 785, and P. Z. S. 1921, p. 426; Gyldenstolpe, Kungl. Sv. Vet. Akad. Stockholm, lv, 1916 (3) p. 15; Wall, Rec. Ind. Mus. xxii, 1921, p. 159, and J. Bombay N. H. S. xxix, 1923, p. 625, and xxx. 1925, p. 813.

Dendrophis tristis subocularis Meise & Hennig, Zool. Anz. Leipzig, xxix 1922, p. 202

xcix, 1932, p. 292.

Closely allied to tristis. Maxillary teeth 21 to 23, posterior smallest; snout broadly rounded; eye as long as its distance from the anterior border of the nostril; internasals a little shorter than the prefrontals; temporals 2+2; 7 or 8 supralabials, one long shield touching the eye with 3 or 4 anterior and 3 posterior to it; vertebrals feebly enlarged, much narrower than the outer row of scales, their posterior margins rounded. Scales in 15:15:11 or 9 rows. V.153-175; C.85-105; A. 2.

Hemipenis extending to the 10th caudal plate, undivided and spinose throughout, the spines in the middle of the organ being largest; the proximal end is plicate; starting a short distance behind the tip and extending for about half the length of the organ beside the suleus, there is a thick fold or tongue

of tissue.

Bronze above, the colour ending abruptly along the middle of scale row 2; rest of lower parts pearly white, or greenishwhite; a pale brown stripe along the side of the body on the lower half of scale row 1 and adjacent part of the ventral shields present or absent; a dark stripe along the side of the head, passing on to the neek where it may break up into

vertical hars vertebral scales on neck and forepart of lady describer semifamon

Total length 9 880 tail 250 mm

Range. Burms (Bhamo), the whole of biam, except the north-eastern plateau as far south as let 11", Dran on the Langbian Plateau & Annam

173 (Ahminia candolinesia.)

Abstulla conditionals Gray, 1824 Ill. Ind. Zool is pl \$1 in type lot grien) - Dendrelaphia condolineania Houlenger P H I 1490 t 339 and Rept Maley Pen 1912 p 147; Smith Bull Raffe Mus to 3 1930, p 53

A Malayan species that has been found as far north as Taple Isthmus of hra

Genus CHRYSOPELEA.

Chepropola 1000 1575 in Fernas. Bull Sci Nai it P 577 and Ini, 1577 p 520 (type Col. ornobal) A Smith. Max 2001 Bull 1535 p 141 Boulegar F B 1 1305 p 717 and Cal Sca. But Mus in, 1805 p 183. Morea and Restate Col. Ann. Perin. ec. 1933. Ap 1 133, Parker Ann Stat. Bull But (10) 2001, 1526 p 227, Brongersan, Zock. Rand Link Bull (10) 2001, 1526 p 227, Brongersan, Zock. Rand Company 2001, 20

Teres ince of Husbrer 18221 Fitzinger 1826, hour Class. Rept

P 27 (type Coluber shebsbace Daudin) Maxillary teeth 20 to 22 the last 3 or 4 a little larger than the others and grooved. Head distinct from neck, eve rather large, with round pupil. Body elongate, scales smooth of feebly keeled, oblique, with spicel pile, in 17, 17 15 rows. ventrals with a suture like lateral keel and a notch on cach aids corresponding to the keel, tail long, subcaudals in two rows, keried and notched like the ventrals. Hypapophyses present or sheent on the posterior dorsal vertebris

Range The Oriental Region and East Indian Islands I recognize five species, three inhabiting India and Indo-China Except that the poeterior teeth are grooved, the mazilla of Chrysopeles resembles that of Aketalla

Brongerams has shown recently that in Chrysopelea ornate the hypapophyses on the resterior dorsal vertebras may be present or absent. An examination of the extensive material in the British Museum shows that their presence or absence can be correlated with geographical distribution, and also with colour pattern. The processes are absent in the specimens inbabting India and Indo-China, but present in these in the

[&]quot;On the Presence or Absence of Hypapophyses under the Posteres Pressidal Vertebra in some Snakes, Zool, Meded, Leiden, xx, 1938, PP 240-242.

Malay Peninsula and Archipelago. They must therefore be regarded as distinct species. For the Malayan form the name paradisi is available. My reasons for regarding taprobanica as distinct are given under that species.

Key to the Species.

1. Hypapophyses absent on the posterior dorsal vertebræ. Last ventral shield divided; colour green above, each scale with a black median line..... ornata, p. 251. Last ventral shield not divided; olive with black cross-bars taprobanica, p. 254. II. Hypapophyses present throughout the vertebral column. Black abovo, each scale with a central yellow spot paradisi, p. 254.

174. Chrysopelea ornata.

GOLDEN TREE SNAKE.

Russell, Ind. Serp. ii, 1801, p. 4, pl. 2, "Kalla Jin" (no type loc, givon).

loc. givon).

Coluber ornatus Shaw, 1802, Gen. Zool. iii, p. 477 (based on Seba, i, t. 94, f. 7 and ii, t. 7, f. 1, and t. 61, f. 2; East India Islands).—Chrysopelea ornata, Boio, Isis, 1827, p. 546; Boulenger, F. B. I. 1890, p. 371, and Cat. Sn. Brit. Mus. iii, 1896, p. 196 (in part); Wall, J. Bombay N. H. S. xviii, 1908, p. 227, col. pl., and xxix, 1924, p. 878, and Sn. Ceylon, 1921, p. 305 (in part); Thompson, P. Z. S. 1913, p. 420; Smith, J. Nat. Hist. Soc. Siam, i, 1914, p. 175, and Rec. Ind. Mus. xlii, 1940, p. 482; Cochran, Proc. U.S. Nat. Mus. lxxvii, 11, 1930, p. 33; Pope, Rept. China, 1935, p. 318; Bourret, Serp. Indo-Chine, 1936, p. 321.

Coluber ibbiboca Daudin, 1802, Hist. Nat. Rept. vi, p. 327 (based

Coluber ibibioca Daudin, 1802, Hist. Nat. Rept. vi, p. 327 (based on Russell's "Kalla Jin").

Chrysopelea ornata ornatissima Werner, 1925, Sitz. Ber. Akad. Wiss. Wien, exxxiv, p. 61 (Angkor Wat, Cambodia: Vienna).

Snout much depressed, broadly truncate; internasals shorter than the prefrontals; frontal bell-shaped, about as long as its distance from the end of the snout; loreal elongate; I large preocular; 2 postoculars; temporals 2+2; usually 9 supralabials, 4th just touching, 5th and 6th below the eye; anterior genials shorter than the posterior; scales smooth or feebly keeled; anal and last ventral divided. V. 207-230: C. 120-138 (Ceylon and S. India); V. 213-234; C. 110-138 (Indo-China).

Hemipenis extending to the 34th caudal plate, undivided; extending from near the distal end of the organ to the tip are several prominent, oblique folds through one of which the sulcus passes; the entire organ is longitudinally plicate, the area proximal to the oblique folds being strongly spinose.

Colour very variable. Boulenger has listed many colour forms, but the range he has allotted some of them is based, I believe, on inaccurate data. After examining material the origin of which is not in doubt, I find that each colour form can be restricted to a definite gengraphical area.

The young are black above, with narrow pale greenishyellow cross bars, these may be dilated vertebrally and on the sides of the body and the scales may or may not have a black menal streak. As age advances the green coloration gradually increases in extent; adults in the area covered by

this work are marked as follows -

I Greenish vellow or pale green above, each scale with a mesial streak or spot of black, and more or less edged with





Fig. 86 -Chrysopeles ornato, Var. L.

black, at regular intervals the scales are entirely black, thus forming cross-bars , a series of large reddish or orange vertebral spots shaped like tetrapetalous flowers present or absent. ventrals greensh, the shield outside the lateral keel with a black spot, or edged with black, head black with yellow cross-bars, and spots (fig. 86), subcaudals edged with black or with a standard spots (fig. 86), subcaudals edged with black or with a standard spots of the standard spots of t or with a black frestal streak. The flower-shaped spots are persent in all Ceylonese specimens that I have seen; they are placed on each alternate cross-bar; they are less evident, or absent, in specimens from Southern India.

Range, Ceylon, and the Western Chats south of the Gos Gap Lide Wall

It. Like the preceding but without the vertebral spots. In specimens from Burms and Siam the black cross-bars are much less conspicuous and may be entirely absent, the mental streak on each scale may then give the appearance of black longitudinal lines (fig. 87 A). In specimens from French Indo-China the black cross-bars are usually very distinct, and they then closely resemble specimens from Southern India.

Range. The whole of the Indo-Chinese region, extending in the north-west to the Triangle in Upper Burma and the Darjeeling district, and to Patna and Buxa in Bihar and Orissa; in the north-east to Tong-King and Southern China (Hong Kong); south to lat. 6° N.

Total length: 3 1040, tail 300; \$ 1100, tail 275 mm.

Examples measuring 1400 mm. in total length are not uncommon.

Many accounts have been written of this snake, of its boldness and courage, its remarkable climbing powers and its

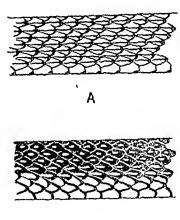


Fig. 87.—Dorsal pattern of A. Chrysopelea ornata, Var. II.; B. Chrysopelea paradisi.

power of "flight." It is a common snake throughout Southern Indo-China, and its diurnal habits and fondness for human habitations make it well known there. Its tastes are catholic and it is prepared to devour anything that it can overcome. Lizards, mainly geckos, small mammals, birds, snakes and even insects have been recorded as part of its diet. I have seen one catch a full-grown mouse, crush it in its coils and swallow it, the whole operation being accomplished in mid-air, the snake being suspended by its tail only from a small branch. There are several accounts of combats between it and the large and powerful Geckos (G. gecko and G. smith) some of which have lasted for over an hour. Its ability to climb perpendicular walls or trunks of trees by taking advantage of

every sight irregularity of surface and thus reach positions

apparently quite inscensible is amazing.

its power of so called fight is well proved The means by which this is accon plusted has been explained by Shelford (1 Z S 1906)

He took one to a height of 15 or 20 feet from the ground and allowed it to fall several times after one or two false starts it was felt to glide from the hands straightening itself out and hollowing the ventral auriaco as it moved and fell at an angle to the ground ti body being kept rigid all the time This

roneavity of the belly can often be seen in preserved specimens. Short distances are negotiated by apringing I have seen one make a series of leaps from branch to branch in a tree cotting steelf in preparation and then suddenly straightening the whole body out as it leaped across The distances covered were between 3 and 4 feet and some of them were made man upward direction

Pairing in Bangkok takes place in June From 6 to 12 very elongate eggs are laid at a time

175 Chrysopèles taprobanica, sp nov

Chrysopeles ornais, Auct (in part)

C taprobanica has been hitherto regarded as a colour variety of ornata but it differs so entirely in coloration from the typical form which is also found in Ceylon that I must regard it as distinct. It has moreover two morphological differences which appear to be constant namely, the last ventral shield is never divided and the scales are always more or less distinctly keeled 1 198-214 C 107 123 A 2 (8 examples examined) 7 specimens from Ceylon of typical ornata have V 207 230 C 120-138

Light olive brown above with narrow wavy black cross hars a black spot on each ventral shield outside the lateral

keel subcadals not spotted below, head as in ornate Total length 2 960 tail 270 mm

Type 2 Brit Mus 1906 7.21 I from Lanthali Ceylon Paratypes 1915 5 3 10-11 Kuranegala Ceylon Range Peculiar to Ceylon

176 Chrysopelea paradisi

Chrysopeles parudui Bo e 1927 Isus p 547 (Java) Ortsoppino porodisi Bo e 1927 Isus p 647 (Java) Chrasoppino orroda (in part) Boulemere Rept Malay Fen 191* p 177 fg Ammadale J Anant Son Bengal n.z. 1 1905 p 212 fg do Roo 1 Rept Indo Austral Arch pel. is, 1917

Like ornate but with the hypapophyses developed through out the vertebral rolumn and a different colour pattern Black above each scale with a central rounded or ovate LYCODON.

255

acuminate, greenish-yellow spot, and with or without a vertebral series of red or yellow tetrapetalous spots; pale greenishyellow below, the ventrals often edged with black. Head as in ornata. In some individuals the central spot may have a median stippling (fig. 87 B).

Range. The Malay Peninsula extending up the west coast as far north as Mergui; Andaman Islands (Narcondam); Borneo and the Philippine Islands adjacent to it; Sumatra;

Genus LYCODON.

Wolf Snakes.

Lycodon Boie, 1826, in Ferussae's Bull. Sci. Nat. ix, p. 238 (in part); Fitzinger, Neue Class. Rept. 1826, pp. 29, 30 (type aulicus); Boulenger, F. B. I. 1890, p. 291, and Cat. Sn. Brit. Mus. i, 1893, p. 348 (in part); Wall, J. Bonbay N. H. S. xvii, 1907, p. 614, and xxix, 1923, p. 612; Bourret, Serp. Indo-Chine, 1936, p. 150; Werner, Zool. Jahrb. Syst. Ivii, 1929, p. 56. Ophites Wagler, 1830, Syst. Amphib. p. 186 (type subcinctus). Sphecodes (not of Latreille 1804), Dum. & Bib. 1853, Mem. Acad. Sci. xviii p. 461 and Erg. Gen. vii. 1854, p. 394 (type alhofuscus).

Sci. xxiii, p. 461, and Erp. Gen. vii, 1854, p. 394 (type albofuscus). Leptorhytaon Gunther, 1858, Cat. Col. Sn. Brit. Mus. p. 205 (type Coluber jara).

Tetragonosoma Günther, l. c. s. p. 253 (type Lycodon effrenis). Tytleria Theobald, 1868, Cat. Rept. Asiat. Soc. Mus. p. 66 (type hypsirhinoides).

Maxillary bone strongly arched, and bent inwards anteriorly, with 3 to 6 anterior teeth increasing in size, fang-like, and separated by a toothless interspace from the rest, 7 to 15 in number, the last two of which are larger than the others. Head not or but slightly distinct from neck, depressed; eye moderate, with vertically elliptic pupil. Body elongate; scales in 19, 17 or 15 rows, smooth or feebly keeled, with apical pits; ventrals with or without a lateral keel; subcaudals paired, except in travancoricus. Hypapophyses absent in the posterior part of the vertebral column.

Common characters, unless otherwise stated: Head elongate, depressed; nostril between two nasals; diameter of the eye greater than its distance from the mouth; rostral much broader than high; internasals much shorter than the prefrontals; loreal elongate, at least twice as long as high: 2 postoculars; 3rd, 4th and 5th supralabials touching the eye.

Aberrations, such as union of the loreal with the prefrontal and an undivided anal when it is usually divided, have been recorded for several species (aulicus, striatus, travancoricus).

Range. The Oriental Region to Transcaspia and the Indo-

Australian Archipelago.

With the exception of L. subcinctus; all the members of this genus appear to be excellent climbers. They are nocturnal in their habits, extremely active in their movements, and generally vicious in disposition, biting readily when molested;

the small are of their teeth however prevents any acrous damage bein, done Lizards form the main part of their diet those species that frequent developes (ashous, tracen corners stratise) living mainly on Geckes the others on Semis small mammals such as mee have also been recorded in their det. All the species are oviparous the eggs being elongate their longth from two to three times that of their breakth.

Lycolon Dinolon and Cercuspie are three closely related genera. Cercuspie is readily distinguished by the character of its vertebra the other two can be separated from one another on their dentition and the shape of the maxillary bone. The division between their however is not clearly marked.

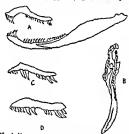


Fig. 88—A Maxille and mand ble and B Painto-maxillary arch of Lycodon sulficus. L. Biaxille of Lycodon forcestus; D Maxille of Dinodon forcestum.

Lecoon faceaties (as pointed out by Wall 1925) and Dinodon gominist commenting them. The centre of distribution of Lycolou is the forestern field region Dinodon is Chinese the meeting place for buyet fire Eastern Humalias and the Truss Himalias and the Truss Himalias and the Lycolou is a genus of small makes only Lote of the proposition of Dinodon are considerably and the members of Dinodon are considerably along the theory of the Control of the Contro

According to him the iris in Lycodon is invisible in life, the whole eye being black, a condition rarely found in snakes.

Hurriah sanguiniventer Cantor, 1839, p. 52 (Valley of Nepal: coloured sketch in Bodleian Library) is, from the drawing, an undoubted Lycodon, but I am unable to assign it to any known species. The head shows two superposed loreals, both touching the eye; no preocular; 8 supralabials, 3rd and 4th touching the eye; temporals 1+2. The scales are keeled. V. 207. angulate laterally; C. 99, the anterior 14 entire.

Deep claret purple above, with metallic tinge; blood-

coloured beneath.

VOL. III.

Total length: 2 ft. 4 in.; tail 7 in (700 mm.).

See also Günther, Rept. Brit. India, 1864, p. 222, fig. head. Cantor's figure of the head does not agree with that given by Günther.

Key to the Species.

A. Scales in 17 rows. No preocular; prefrontal and loreal in contact with the eye; scales feebly subcinctus, p. 258. keeled U. A preocular separating the prefrontal from the eye; loreal not touching the eye; scales smooth. a. Loreal not or but slightly in contact with the internasal; anterior and posterior nasal shields subequal. Anal undivided; back with light cross-bars travancoricus, p. 259. which are never pure white Anal divided; back with light cross-bars, the lacensis, p. 259. anterior of which are pure white b. Loreal extensively in contact with the internasal. Ventrals not angulate laterally; posterior nasal usually distinctly smaller than the anterior. Snout not projecting; 8 or 9 supralabials; black above, each scale with two white jara, p. 260. Snout projecting; 8 supralabials; back with a series of light vertebral spots or crossbars Snout projecting; 9 supralabials; back with etriatus, p. 261. a series of small white vertebral spots.... flavomaculatus, p. 262. Snout projecting: S supralabials; back with mackinnoni, p. 263. light reticulations 2. Ventrals angulate laterally. 9 supralabials; posterior nasal not smaller aulicus, p. 263. than the anterior III. A preocular; loreal touching the eye; keeled; ventrals angulate scales fasciatus, p. 266. laterally B. Scales in 15 rows. 7 supralabials; T. 1+2..... kundui, p. 260. C. Scales in 19 rows. A preocular; scales keeled paucifasciatus, p. 267.

177 Lycodon subcinctus

Russell, Ind. Serp al, 1801, p 44, pl. xis (Java)

ittoerdi, Ind. Serp. II, 1901, p. 44, pl. 2, ft (Java) . The Gunerit Equation Locations Book, 1827, Lisa, p. 531 (Jased on Russelli Equation) . The Committee Book 1827, Lisa, p. 531 (Jased on Russelli Route Book, 1921, 192

p 195, fig bead. Elopodes annulatus Sauvage, 1834, Bull Soc. Philom (7) viii,

p 144 (Sumatra Parm)

Snout broad, posterior masal higher than the anterior; no preocular, the prefrontal in contact with the eye; lorest touching the eye, widely separated from the internasal; temporals 1+2, 8 surralabials, anterior pair of genuls as long as or a little longer than, the posterior, Scales in 17 17 15 rows feehly keeled, the outer rows usually smooth. V 197-230, angulate laterally , C 71-90 . A. 2

Hemipenis extending to the 13th caudal plate, forked near the tip, the distal is calyculate, the edges of the calyces being set with numerous line fleshy spines; the remainder of

the organ has longitudinal folds

Grynh or purplish black above, with widely separated, white cross bers, 10-13 on the body; these markings very distinct in the young hat becoming less distinct and usually disappearing entirely on the hinder part of the body m the adult, white below, the ventrals sometimes edged with black , hunder part of the head white in the young, greyah or blacksh in the adult, in the young the dark coloration of the back is continued across the belly; under surface of tail grey in the young, white in the sdult. Adult specimens, particularly those from the northern part of its range, have the white cross-bars thickly speckled with black.

Total length . & 900, tad 190 . Q 1000, tail 180 mm. Barge The whole of Siam and French Indo-China; Hainan;

Southern China, Hong Kong; the Malsy Peninsula and Archipelago

Rare in the northern part of its range, except on Hong Kong L, where according to Herklota it is not uncommon.

L subcancius is found usually at low altitudes, but has been obtained on Gunong Tahan in the Malay Penusula at 5,400 feet ahitude (Smith, 1930) Its food appears to consist entirely of scinks (Pope, 1935) Kopstein (1930) has figured the eggs laid by a Javanese specimen. Five were laid between May 20th and 24th and hatched out on August 11th.

178. Lycodon travancoricus.

Cercaspis travancoricus Beddome, 1870, Madras Month. J. Med. Sci. ii, p. 169 (Travancore Hills: London) and J. Soc. Bibl. Nat. Hist., I, 1940, p. 327 (reprint).—Lycodon travancoricus, Boulenger, F. B. I. 1890, p. 293, and Cat. Sn. Brit. Mus. i, 1893, p. 355, pl. xxiv, fig. 3; Wall, J. Bombay N. H. S. xvi, 1905, p. 297, and xix, 1909, p. 756, and xxvi, 1919, p. 565, and xxix, 1923, p. 613; Ferguson, ibid. x, 1895, p. 71.

Snout broad; anterior and posterior nasals subequal; loreal normally not touching the eye, not touching the internasal; a preocular; temporals 2+3 or 3+3; 9 supralabials; anterior pair of genials as large as or a little larger than the posterior. Scales in 17:17:15 rows, smooth. V. 176-206, angulate laterally; C. 64-76, paired, or some, rarely all of

them, single; A. 1

Hemipenis extending to the 12th caudal plate, forked at the tip; the distal one-third can be divided into two parts, a larger portion adjacent to the sulcus which is flounced and more or less calyculate, the flounces being large and arranged in oblique or transverse folds, and a narrower portion opposite to the sulcus which is spinose; the remainder of the organ is spinose, the largest spines being opposite the sulcus; at the extreme tip of the organ are two small smooth areas or pockets.

Dark purplish-brown or blackish above, with pale yellow cross-bars which bifurcate on the sides, enclosing more or less triangular spots; the first cross-bar is on the nape; those on the anterior part of the body are further apart than those on the posterior; all of them are more or less distinctly speckled with black; uniform white below; upper lip usually brown, spotted with white.

Total length: \$\overline{6}\$ 600, tail 125; \$\overline{9}\$ 625, tail 120 mm. (Wall,

742).

Range. The Western Ghats, as far north as Matheran. Wall also records it from South Arcot, Vizagapatam, and Jubblepore in the Central Provinces. Common in the Wynaad and the Nilgiris.

179. Lycodon lacensis.

Lycodon lacensis Günther, 1864, Rept. Brit. Ind. p. 317 (Lacs, French Indo-China: London); Boulenger, Cat. Sn. Brit. Mus. i, 1893, p. 354, and Rept. Malay Pen. 1912, p. 132; Smith, J. Nat. Hist. Soc. Siam, ii, 1916, p. 160, and Bull. Raffles Mus. No. 3, 1930, p. 46.

Anterior and posterior nasals subequal; loreal not, or just, touching the internasal, not touching the eye; a preocular, temporals 2+3; 9 supralabials; the anterior pair of genials much larger than the posterior. Scales in 17:17:15 rows. smooth, V. angulate laterally, 165-187; C. 60-73; A. 2.

Hemipenis extending to the 10th caudal plate, forked at the tip, the extremity of the organ is call culate, the calvers being very large and folded transversely; the remainder of the organ is spinose, the spines being arranged in longitudinal

series, the largest ones are opposite the sulcus Brownish or blush black above, with bright yellow crossbars which expand laterally, posteriorly they are narrower and closer together, and the lateral expansions enclose triangular spots, a yellow bar on the nape; upper hp and

lower parts uniform white

Total length Q 475, tail 90 mm

Range The whole of Siam and the Malay Pensinsula as far south as Patani, Laos, Cochin China; S Annam (Langbian plateau)

A female caught in northern Siam on April 3rd contained 5 eggs

180 Lycodon kundul, ap nov

Anterior and posterior massl subequal; forest twice as long as high well acparated from the internasal and the eye; temporals 1+2, 7 supralabials, 3rd and 4th touching the eys , 4 infralabials in contact with the anterior pair of genials, which are much larger than the posterior Scales amouth, in 15 15 15 rows V. 186, atrongly angulate laterally; C 70; A 2

Blush black above, with narrow white cross-bars, on the Posterior half of the body they are closer together and bifurcate or break up on the sides A white bar on the nape; lower parts (ventrals and outer scale rows) white

Total length 225, tail 38 mm

Described from a single juvenile specimen obtained by Dr Kundu of the Harcourt Butler Institute, Rangoon, at Gyobyu, Tsikkyi Township, Pegu district I have pleasure in naming it after him

L kundus is most nearly related to L laceness, from which it differs in the reduction of the number of scales round the body as well as of the lahuals and temporals

No member of the genus has yet been described with only 15 scales round the body, in dentition and in the shape of the maxillary bone, however, this new species is a typical

181 Lycodon jara

Romell, Ind. Seep I, 1798, p. 19, pl. xiv (Ganjaco). Celeberjore Chaw, 1802, Gen. Zool, in p. 535 (based on Russell's Line Lancotto Jozo, Stollecka, J. A. B. Bengul, xl. 1871, p. 487, Boulenger, F. B. I. 1890, p. 392, and Cat. Str. Brit

Mus. i, 1893, p. 350, and Rec. Ind. Mus. ix, 1913, p. 338; Wall, J. Bombay N. H. S. xix, 1909, pp. 344 and 619.—
Leptorhytaon jara, Günther, Rept. Brit. Ind. 1864, p. 321.—
Ophites jara, Wall, J. Bombay N. H. S. xxix, 1923, p. 612; Shaw & others, J. Darjeeling N. H. S. xxii, 1939, p. 155. Coluber bipunctatus Cantor, 1839, P. Z. S. p. 52 (Balasore, Bengal:

sketch in Bodleian Library).

Snout not projecting beyond the lower jaw; anterior nasal usually larger than the posterior; loreal in contact with the internasal, not touching the eye; a preocular; temporals 1+2 or 2+3; 8, sometimes 9, supralabials; anterior pair of genials larger than the posterior. Scales in 17:17:15 rows. smooth. V. 167-188, not angulate laterally; C. 52-74; A. 2.

Hemipenis extending to the 10th caudal plate; the distal is obliquely flounced and calyculate, the remainder of the organ spinose, the spines being large and of more or less

equal size throughout.

Brownish or purplish-black above, stippled all over with white (yellow in life), the pattern being formed by small spots or short longitudinal lines, two on each scale; upper lip and lower surface uniform white; a white collar always present in the young.

Total length: 3 535, tail 115; \$\times 550\$, tail 105 mm.

Range. Ganjam in the northern part of the Madras Presidency; the Eastern Himalayas as far west as longitude 85°; Bengal: Assam.

182. Lycodon striatus.

Russell, Ind. Serp. i, 1796, pp. 22, 32, pls. xvi & xxvi (Vizaga-

patam and Hyderabad).

patam and Hyderabad).

Coluber striatus Shaw, 1802, Gen. Zool. iii, p. 527 (based on Russell's pl. xvi).—Lycodon striatus, Stoliczka, 1870, J. A. S. Bengal, xxxix, p. 200; Anderson, P. Z. S. 1871, p. 187; Boulenger, F. B. I. 1890, p. 292, and P. Z. S. 1891, p. 632, and Cat. Sn. Brit. Mus. i, 1893, p. 349; Annandale, J. A. S. Bengal, 1904, p. 208, and Mem. A. S. Bengal, i, 1906, p. 194; Green, Spol. Zeyl. ii, 1905, p. 205; Wall, ibid. 1907, p. 174, and J. Bombay N. H. S. xviii, 1907, p. 110, and xix, 1909, p. 102, col. pl., and xx, 1911, p. 1034; Nikolsky, Faune de la Russie, 1916, ii, p. 74; Cernov, C. R. Acad. Sci. Leningrad (n.s.), iii. 1935, p. 189.—Ophites striatus, Wall, Sn. Ceylon, 1921, iii, 1935, p. 189.-Ophites striatus, Wall, Sn. Ceylon, 1921, p. 147, and J. Bombay N. H. S. xxix, 1923, p. 612; Ingoldby, ibid. xxix, 1923, p. 127.
 Coluber malignus Daudin, 1803, Hist. Nat. Rept. vii, p. 46 (based)

on Russell's pl. xvi).

Lycodon galathea Daudin, 1803, l. c. s. p. 55 (based on Russell's

pl. xxvi). I Lycodon napei Dum. & Bib. 1854, Erp. Gen. vii, p. 384 (Indes Orientales: Paris).

Snout projecting beyond the lower jaw anterior nasal usually larger than the posterior; loreal in contact with the

mternasal, not touching the eye, a preocular; temporals 2+3 rarely 1+2, 8 supralabials, anterior pair of genula larger than the posterior Seales in 17 17, 15 rows, smooth V South of lat 20°, 154-166, north of lat 20°, 163-195 C South of lat 20°, 35-50, north of lat 20°, 44-58, A 2 The lowest candal count (35) is from Ceylon, the highest ventral count (195) from the Perso-Baluchistan frontier

Hemipenis as in jura Dark brown or blackish above with white or yellow cross bars, which expand laterally and usually also dorsally; on the sides of the body anteriorly the expansions enclose triangular spots, on the posterior part the bars are narrower and closer together, and on the sides break up to form reticulations; a

lower parts uniform white, Total length 2 370 tail 60 mm

white har on the nape present or absent; upper lips and Range Ceylon , India as far east as Chota Nagpur , north to the Punjab (Agra, Labore, Simla), Sind, Baluchistan;

N WF Provinces and westwards to Transcaspia

According to Wall, L strastes is found in the plains and in the hills up to 2,000 feet altitude, and in certain parts of India is comparatively common Ingoldby (1923), on the other hand, records it in Waziristan at 3,600 and 5 000 feet Eggs 2 to 4 in number, 33×8 mm in size, are laid in July and August Wall states that it is timid in disposition and that he has never known one to strike, no matter what the provocation Usually it makes no endeayour to escape, but coals itself up, and if touched or teased hides its head beneath its **Bouls**

183 Lycodon flavomaculatus.

Lycodon flavoraculatus Wall 1907, J Bombay N.H.B xvu, p 512, pl — (Ond, and Kirkee London)—Ophiles flavomaculatus shid, xxix, 1923, p. 513

Differs from structus in having 9 supralabilis material of 8, in the characters of the bemipens, and in colour pattern. Black above, with a series of small roundish or triangular, yellow, vertebral spots, opposite which bars of the same colour descend and broaden to form a reticulation on the flanks V 170-183 , C 53-63

Hemipenis extending to the 15th caudal plate, forked at the tip, the distal I is beset with large papille, the remainder of the organ is spinose, those opposite the sulcus being the

Range Western Ghats (Nastk, Ouds, Kirkee, Poons, Deplali, Dharwar, Sangli), Berar (Buldana)

LYCODON.

184. Lycodon mackinnoni.

Lycodon mackinnoni Wall, 1906, J. Bombay N. H. S. xvii, p. 29, fig. head (Mussooree: London).-Ophites mackinnoni, Wall, ibid. xxix, 1923, p. 614.

Snout projecting beyond the lower jaw; posterior nasal distinctly smaller than the anterior; loreal extensively in contact with the internasal, not touching the eye (united with the prefrontal in the type); a preocular; temporals 1+2 or 2+3; 8 supralabials; anterior genials larger than the post-Scales in 17:17:15 rows, smooth. V. 163-187, feebly angulate laterally; C. 48-56; A. 2.

The hemipenis can be divided into two parts, a distal transversely flounced portion and a proximal in which there

are a few, very large spines.

Dark brown or chocolate above, with a network of white lines, the light colour being confined to the edges and tips of the scales; uniform white below or the ventrals edged with brown.

Total length: 2 365, tail 65 mm.

Range. Western Himalayas (Mussooree, Almora, Muktesar near Naini Tal).

185. Lycodon aulicus.

COMMON WOLF SNAKE.

Russell, Ind. Serp. ii, 1801, p. 41, pl. xxxvii (Java), and p. 42, pl. xxxix (India).

Coluber aulicus Linn., 1764, Mus. Adolph. Frider. i, p. 29, pl. xii, fig. 2 ("America": type in Stockholm), and 1758, Syst. Nat. 10th Edit. p. 220.—Lycodon aulicus, Günther, Rept. Brit. Ind. 1864, p. 316; Blyth, Zool. Andamans, 1863, p. 365; Stoliczka J. A. S. Bengal, xxxix, 1870, p. 201; Murray, Zool. Sind, 1884, p. 383; Boulenger, F. B. I. 1890, p. 294, and Cat. Sn. Brit. Mus. i, 1893, p. 352, and Rept. Malay Pen. 1912, p. 131; Andersson, Bihang K. Sven. Vet. Akad. Stockholm, xxvi, 1899, 6, iv, p. 16; Laidlaw, Fauna Mald. Lacc. 1902, p. 121; Wall, J. Bombay N. H. S. xv, 1904, p. 706, and xviii, 1907, p. 112, and xix, 1909, pp. 87, col. pl., 344 & 619, and xix, 1910, p. 756, and xxvii, 1919, p. 565; D'Abreu, Sn. Nagpur, 1916, p. 20; Smith, P. Z. S. 1927, p. 221; Bourret, Serp. Indo-Chine, 1936, p. 151; Pope, Rept. China, 1935, p. 187; Prater, J. Bombay N. H. S. xxx. 1924, p. 168; Fraser, ibid. xxxix, 1937, p. 473.—Ophites aulicus, Wall, Sn. Ceylon, 1921, p. 151, and J. Bombay N. H. S. xxix, 1923, p. 613, and Spol. Zeyl. xii, 1922, p. 257; Herklots, Hong Kong Nat. vi, 1935, p. 199; Shaw & others, J. Darjeeling N. H. S. xiii, 1939, p. 155.
Lycodon capucinus Boie, 1827, Isis, p. 551 (based on Russell, ii, pl. xxxvii). pl. xxxix (India).

pl. xxxvii).

Lycodon unicolor Boie, 1827, Isis, p. 551 (based on Russell, ii,

pl. xxxix). Lycodon subfuscus Cantor, 1839, P. Z. S. p. 50 (Bengal: col. sketch in Bodleian Library). Lycodon atropurpureus Cantor, l. c. s. p. 50 (Mergui, Tenasserim: col sketch in Bodle an Library) and Boulenger F B § 1890

Lycodon anamallenese Ganther 1864, Rept Brit Ind. p 213
Anjumaliai II iis Landon) Boulenger F B I 1890, p. 233

and Cat. St., Birk Mus. I, 1843. p. 351—Ophius anamalleur Wall, J. Bombay N. H. Sanz, 1943. p. 613 Tytero Appa A nodes Theobald, 1863. Cat. Rept. Asiat 30c. Mus p 68 (Andaman Islandas Calentta; in part)

Lycodon guileus of gozonatus Wall, 1909 J Bombay h H S 202, p 53 (Cannanore 8 India)

Snout more or less spatulate and projecting beyond the lower law anterior and posterior nasals usually subequal,



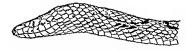


Fig 89 -- Lycodon automs ×" (B.M 1908 6.23 15)

loreal in good contact with the internasal not touching the eye I preocular temporals rariable usually 2+3 supralabilis anterior pair of gentals a little larger than the posterior Scales in 17 17 15 rows amouth \(\) 172 214 strongly angulate laterally C 57-80 A 2

Remipens extending to the 10th caudal plate forked near the top the distal is calveulate the calvees being transversely arranged the remainder of the organ has longitudinal folds which are beset with more or less distinct spines starting from the calverlate portion of the organ and extending about half way down, are two prominent folds composed of a number of short fleshy pap list

Two races can be distinguished:-

I. Lycodon aulicus aulicus.

Brown or greyish-brown above, with from 12-19 white cross-bars which expand laterally or bifurcate, enclosing triangular patches; the bars may be pure white or heavily speckled with brown; they are sometimes reduced to short vertebral spots; a triangular whitish blotch on each side of the occiput, or the two confluent with one another, usually present; upper lip white or spotted with brown.

Ceylon; India; Nepal; Assam; Burma, north of lat. 17°.

II. Lycodon aulicus capucinus.

Brown or purplish-brown above, with more or less distinct fine white or yellow reticulations; a whitish blotch on the occiput as in I; labials white, some or all of them with a brown spot. The light reticulations are occasionally confined to the interstitial skin, so that the snake looks at first sight uniform brown.

Burma south of lat. 24°; Siam; Southern French Indo-China; Hong Kong; The Andaman and Nicobar Islands.

In occasional individuals of both forms the white markings are lost entirely so that the specimen is uniform brown above.

white below (unicolor Boie).

In hatchlings from the Andaman Islands the reticulated pattern is very conspicuous, the light colour being much more widely distributed; the adult is uniform brown above, except

for a slight reticulation on the forepart of the body.

Range of the species: Ceylon; the Maldive Is.; the whole of India, extending west to Sind and north to the Himalayas (Kangra district, Nepal, Sikkim); the whole of Indo-China; Hong Kong; Southern China; the Malay Peninsula and Archipelago, as far south as Timor; the Andaman and Nicobar Is.: Celebes and the Philippines; (introduced).

Total length: 3 760, tail 145; \$ 700, tail 120 mm.

The commonest and most widely distributed of all the Wolf Snakes. Its fondness for entering and living in human habitations and the liability of being transported in cargoes has, no doubt, aided its dispersal. From 3 to 11 eggs are laid at a time, and possibly it breeds twice during the year. writing of Indian specimens, records that he has examined gravid females in all the first seven months of the year; the eggs were laid in the months from February to July, and after mating, the pair do not dissolve partnership for a long time, if they do so at all." In Spol. Zeyl. (1922) he records finding a gravid individual in November. Herklots (1935) writing from Hong-kong records a female that laid 4 eggs on August 19, which were hatched out on September 23 (35 days later). During that time the female "was nearly

always observed to be carled on top of them." The young when born measure from 140-180 mm in length

Grekos seem to form the mam part of its feed other lizards particularly Scinks come next, mice and frogs have

also been recorded as part of its diet.

I have placed L subfuseus and L atropurpureus both of Cantor in the synonymy of this species. The abotch of subjectes to a good illustration of lar I of this make, that of atropurpareus of Var II The ventral counts 245 for subjuscus and 257 for atroputpureus may be an error no Oriental species of Lycodon having an high a ventral count. In his MS Cantor states that L atropurpareus is very common on the Tenasserim coast and often enters houses.

lanation L anomalleness appears to be an aberrant example of L nulieus differing in having the lorest divided mto an anterior and a posterior part and an undireded and sheld another specimen from the Wynasd (B M 74 4 29 9.9) has two lorests on one side but only one on the other # specimen from Ceylon (B.M victnity of Candy) has an

undivided anal

166 Lycodon fasciains

Ophies January Anderson, 1879 Anat Zool, Rev. W. Yonson, W. L. V. Yang, C. V. Yang, C. Y. Yang, Y. Yan

Snort projecting beyond the lower raw, posterior massi larger than the anterior loves touching the eye well separated from the internacial temporals 2+7 8 supralabula. Scales in 17 17 15 rows the outer smooth the median 5-7 rows feebly but distinctly keeled \ 197-2:0 feebly angulate laterally C 69-94 A. I

Hemspens extending to the 8th caudal piste it is spinose throughout the spines being small and closely set except at the proximal end, where they are much larger and fewer in

number The suicus edges are strongly raised and spinose Biack or purplish black above with yellowish cross-bars of arregular online 23 to 42 m number on the body best marked americely in the young the dark colour of the back extends found the body forming complete annuli in the adult these are incomplete belly blotched and powdered with black hinder part of the head white in the young in the soult the hight cross-bars have a dark median stippling Two specimens in the Natural History Museum, Paris, from S.E. Tibet, exact locality unknown, have 46 and 49 cross-bars on the body respectively.

Total length: of 850, tail 170 min. (934 mm., Wall).

Range. The Eastern Himalayas; Assam; S.E. Tibet; Burma; Siam (Tawkawbee, 9 miles S. of Um Pang, lat. 16° N., long. 98° 75′ E.); Yunnan; Upper Laos; W. China.

Apparently not uncommon in the hilly districts of Assam

and Upper Burma.

A hill species found at altitudes ranging from 3,000 to 7,000 feet, usually in bushes or trees. The eggs vary in number from 4 to 14. Its food consists chiefly of lizards and snakes.

187. Lycodon pauclfasclatus Rendahl, sp. nov.

Internasals \(\frac{1}{3} \) the length of the prefrontals; a preocular; temporals 2+3; 8 supralabials. Scales in 19 rows, the seven median rows keeled at mid-body. V. 219, distinctly angulate laterally; C. 90.

Black above, with whitish annuli of irregular outline, 14 on the body and 8 on the tail; below whitish with greyish variegations, best marked on the hinder part of the body and tail; a white bar across the hinder part of the head.

Total length: 763 mm.

This new species, which differs from all other members of the genus in having 19 scale rows, was described to me by letter by Prof. Rendahl of the Natuurhistoriska Rijksmuseum, Stockholm.

It is from Thua Lun, Annam, 50 km. south of Hué.

Genus CERCASPIS.

Cercaspis Wagler, 1830, Syst. Amph. p. 191 (type Hurria carinatus Kuhl); Dum. & Bib., Erp. Gen. vii, 1854, p. 390; Günther, Rept. Brit. Ind. 1864, p. 323; Wall, Spol. Zeyl. xi, 1921, p. 404.

Lycodon, Boulenger, F., B. I. 1890, p. 291.

Dentition and general appearance as in Lycodon, but differing in the following characters:—Scales in 19 rows, strongly keeled; subcaudals single; prezygapophyses of the dorsal vertebræ extended and forming strong lateral expansions; neural spines expanded and divided into two by a longitudinal groove* (fig. 90).

The strongly dilated prezygapophyses of the vertebræ can be readily felt, without dissection, as a ridge along each side

of the back.

A single species.

Wall was the first to point out (1921) the unusual character of the vertebræ of this snake.

^{*} Found also in the S. American Xenopholis.

188 Cercaspis carinatus.

Harmo cannada Kahl, 1820, Beitr Zool Vergi Anat p 95 (or type los gwen)—Creaspa cannahas (Guather, Rept land 1864 p 324, Wall, Rpol. 7eyl, x₁, 1921, pp 339, 404, and xm 1924 p 77, and 86 (celyon, 1921, pl 82, and J Bondy N H S xxix 1923, p 614—Lyoqdon cannahas Bonlural, F B 1 1809, p 207, and Cat 88, Beit Mus L 1832, p 338,

Head elongate, depressed, snout broad; nostril between two nasals, the anterior smaller than the posterior, loreal

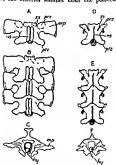


Fig 40—A.B. Dorsal and C. Hunder, view of vertabre of Geographs of personal D.E. and F. Banco of Levedon universal phone; pres. populary, p.g., p.g.

eloggue, separated from the internatal and the eye; 1 preand 2 protoculars, temporals 2+2 or 2+3, 8 or 8 separlabals, 3rd, 4th and 6th touching the eye, anterior par of genate as long as, or longer than, the posterior; scales in 17 or 18 19, 17 rows, strongly keeled except the outermost row, Visib is teebly keeled. V. 183-202, with a strong latest level.

269 . DINODON.

Hemipenis extending to the 10th caudal plate, transversely flounced in its distal part, spinose in the remainder; the spines are comparatively thick and short, the largest ones being opposite the sulcus.

Black with whitish or pale yellow annuli; these are much narrower upon the back than upon the belly, and are usually broader in the young than in the adult; in a fully-grown specimen from Punduloya, the dorsal bars have disappeared completely; hinder part of the head white in the young.

Total length: 3 730, tail 125 mm.

Range. Ceylon. Found in the low country and in the hills up to 4,000 feet altitude. A common snake at Hopwell Estate, Balangoda district.

Genus DINODON.

Dinodon Dum. & Bib. 1853, Mem. Acad. Sci. Paris, xxiii. p. 463, and Erp. Gen. vii, 1854, p. 447 (type cancellatum=rufozonatum); Boulenger, Cat. Sn. Brit. Mus. i, 1893, p. 360; Steineger, Herp. Japan, 1907, p. 356; Wall, J. Bombay N. H. S. xxix, 1923, p. 616; Pope, Rept. China, 1935, p. 197; Bourret, Serp. Indo-Chine, 1936, p. 158; Werner, Zool. Jahrb. Syst. Ivii, 1929,

Eumesodon Cope, 1860, Proc. Acad. Nat. Sci. Philad. xii, p. 262

(typo semicarinatus).

Lepidocephalus (not of Bleeker, 1858) Hallowell, 1860, Proc. Acad. Nat. Sci. Philad. xii, p. 498 (same type).

Adiastema Werner, 1925, Sitz. Ber. Akad. Wiss. Wien, exxiv,

p. 54 (type cervinum). Lycodon (in part), Boulenger, F. B. I. 1890, p. 291.

Maxillary bone extending beyond the palatine, bent inwards but not arched, or only slightly, with 5-7 anterior teeth increasing in size, fang-like, and separated, or not, by a toothless space from the rest, 5 or 6 in number, the last 2 or 3 of which are larger than the others. Head not or but slightly distinct from neck; eye moderate with vertically elliptic pupil; body elongate; scales in 17:17(19):15 rows. smooth or feebly keeled, with apical pits; ventrals with or without a lateral keel; tail long; subcaudals paired. Hypapophyses absent on the posterior dorsal vertebræ.

Common characters, unless otherwise stated: Head elongate, depressed; nostril between 2 nasals; diameter of the eye equal to, or greater than, its distance from the mouth; internasals much shorter than the prefrontals; elongate; 1 pre- and 2 postoculars; temporals 2+2 or 2+3;

8 supralabials, 3rd, 4th and 5th touching the eye.

Range. The Eastern Himalayas as far west as Sikkim; Indo China as far south as lat. 16° N.; China; Japan.

Eight or 9 species are known.

For the affinities of the genus see p. 256.

Key to the Species.

Rody with white annuls of stregular outline . gammer p 271 27 to 35 light : ross bars on the back ... septembranalis, p. 270

189 Dinodon septentrionalis

Ophites erptentrionales Gunther, 1875 P Z S p 233 (E. Himalayas or Khasi Hills London)—Lycodon replentronalia, Boulenger, F.B. I. 1890 p. 295—Dandon septentronalia Boulenger, Cat. So. Bert. Mas. I. 1823, p. 365 (in part), and m, 1896, p 619, and Ann. Hus Cav Centra (5) xin, 1892, p 324, and J Bombay K H B xxx, 1903, p 235, Vall, ibel xvin 1908, p 778, and xxxx, 1923, p 613, and Rec Ind Mos. 1909 p 146 Angel Bull, Mus H. N Pant, 1929, p 78, Bourret. Seep Indo-Chine, 1916, p 162 Shaw & others, I Darpeling N H. Soc xm, 1939, p 159

Dinoden replentrionale chapaense Angel & Bourret, 1953, Buil Sie Zool, France Ivin, p 129 (Chaps, Tong King, Pars); Bourtet, 6erp Indo-Clune 1936, p. 164

Posterior nasal larger than the anterior; loreal sometimes very mostl, well separated from the internasal and the eye,





Fig. 91,-Danolou septembronules (B.M. 1908 6.23 101)

scales smooth or the median 5-7 rows feebly keeled. V. 207-217, anyplate laterally; C 81-92; A. 1. dempens undersied extending to the 10th candal plate. estyrmate and spinous throughout, the calves being ansite with a minute spine at each corner . At the extreme tip of the DINODON. 271

organ the calyees are larger, and extending the whole length are six prominent folds, two of which border the suleus.

Purplish black above and on the sides, with narrow, white, transverse bars, 25-35 in number on the body, which expand laterally; on the forepart of the body the bars are about twice as far apart from one another as on the hinder part; lower parts white, sometimes spotted or barred with black, these markings being a continuation of the dark colour on the back; tail heavily marked with black below; hinder part of head white in the young, usually black in the adult.

Total length: 2 1180, tail 190 mm.

Range. The Eastern Himalayas (Darjeeling district); Assam; Burma; Siam as far south as Chiengmai; Upper Laos (Chieng-Kuang); Tong-King (Chapa, Ngan-Son).

190. Dinodon gammiei.

Ophites gammiei Blanford, 1878, J. A. S. Bengal, xlvii, p. 130 (Cinchona plain, Darjeeling: Calcutta).—Lycodon gammiei, Boulenger, F. B. I. 1890, p. 296, and Cat. Sn. Brit. Mus. i, 1893, p. 358; Sclater, List. Sn. Ind. Mus. 1891, p. 15.—Dinodon gammiei, Wall, J. Bombay N. H. S. xxix, 1923, p. 615.

Lycodon fasciatus (not of Blanford), D'Abreu, J. Bombay N. H. S. 1911, xx, p. 857, and xxi, 1912, p. 1335, fig. head.

Like D. septentrionalis in general scalation. V. 206-214; C. 94-104; A. 1.

Hemipenis extending to the 10th caudal plate; the anterior half is calyculate, the ealyees being small with a minute spine at each angle; the proximal part of the organ is provided with large coarse spines; parallel with the sulcus and separated from it by a short distance are two folds.

Body with alternating black and light greenish-yellow rings with very irregular margins, 28 to 36+15 or 16 in number; head black with light spots on most of the shields; a large light spot on each side of the posterior part of the head.

Total length: 3 1150, tail 290 mm. Range. Sikkim and Darjeeling district.

Four specimens are known.

As pointed out by Wall, the type has 17 scales on the neek and 19 at the middle of the body.

191. Dinodon flavozonatus.

Dinodon flavozonatum Pope, 1928, Amer. Mus. Novitat. No. 325, p. 2 (Chungan Hsien, Fukien Province: New York), and Rept. Chins, 1935, p. 198, fig.; Smith, Rec. Ind. Mus. xlii, 1940, p. 482.

Dinodon rufozonatum meridionale Bourret, 1935, Bull. Gen. Instr. Pub. Hanoi, March, p. 241 (Chapa, Tong-King: Paris), and Serp. Indo-Chine, 1938, p. 161.

Posterior nasal larger than the anterior; loreal well separated from the internasal and the eye; scales of the median 10-12 rows feebly keeled V 225-240, with a distinct lateral keel C. 85-99 A 2

Hemipenis extending to the 13th caudal plate not forked, the dutal f of the organ has smooth longitudinal folds, the middle is calventate the cups being extremely small, and in general arranged so closely together that they present a sponge like appearance, the edges of the curs are approve, this area merges gradually into a spinose one the spines gradually increasing in aire as they approach the base of the organ the atleus lips are formed by two thick folds which

are spinose like the parts adjacent to them

black above with light (rellow in life) narrow cross-bars 83 to 95 in number on the body, which bifurcate on the notes enclosing dark spots, white below (yellow in life) with large black spots these are subquadrangular in shape in the midule of the ventrals and more counded on the outer margins , head black with symmetrical light markings the most consp coors being one from the eye to the angle of the mouth and another parallel with it starting from the hinder margin of the parietal . labials edged with black

Total length & 1440 tail 270 . 9 1210, tail 220 mm Range Mr Ronald Laulback obtained 5 specimens in the Nam Tamas Valley, north of the Triangle Upper Burma. Elsewhere it is known from Tong King and Western China.

Genus DRYCCALAMUS

Symple (not Martine 1774) Pitzinger 1826 Neus Class Rept.

Odostowa (non Kirby 1837) Dum & Bb., 1833, Men. Acad. Sci. Farm, xxxx, p 463 (17pe symphe)
Dryscalonus Ganther 1858 Cat Col Sa. Birt. Mus. p. 121 (17pe
Dryscalonus Ganther 1858 Cat Col Sa. Birt. Mus. p. 121 (17pe

framgana); Bouleagree Cat Sn. Brit Rins, i 1893 p 369 flydrophobus Glinther 1862, Ann. Mag Ant Hat (3) is, p. 127 ilype sent/ascratus); Bouleager F B I 1890 p. 297

Appropriation of Bother 1864, Rept Brit Ind. p. 235 (1776) mondistum evaluation Ulupe Blanford, 1878, J. A. B. Bengal, xivu, p. 129 (type direcent).

Maxillary bone bent inwards and extending well beyond the Palatine with from 8 to 10 treth mercasing in size posteriorly liesd not very distinct from neck, eye large, with vertically elliptic pupil, scales in 13 or 15 rows throughout, with apical pits tail moderate, subcaudals paired Hypapophyses absent on the posterior dorsal vertebra

Common characters unless otherwise stated Head subovate when viewed from above, depressed, eye large or very large its distributions. large its dameter usually much greater than its distance from the most the mouth rostral broader than high, internassis a little shorter the rostral broader than high, internassis a little shorter than the prefrontals, loreal elongate, anterior pair of genials longer than the posterior; scales smooth; ventrals

strongly angulate laterally.

The general reduction in scalation is shown in the number round the body, the union of the nasals, the union of the loreal with the preocular and the number of labials.

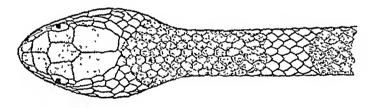


Fig. 92.—Maxilla and palato-maxillary arch of Dryocalamus davisoni.

Range. India; Indo-China; the Malayan region; the Philippines.

Five species are known.

A genus of small snakes, of gentle disposition and nocturnal habits. They are good climbers.



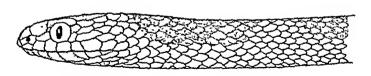


Fig. 93.—Dryocalamus nympha. (B.M. 92.11.3.4.)

Key to the Species.

Scales in 13 rows:	1-2 preoculars	davisoni, p. 274.
VOT TT		Tr.

192 Dryocalamus nympha.

REIDAL SNAKE

Russell, Ind Serp 1, 1796, pp 42, 43 pls xxxvi & xxxvii (vellore,

Coluber nympha Dandin, 1803, Hat Nat Rep vi, p 241, pl hrv.

fig 1 (based on Russell's pla.) —Odontomie nympha Gunther, Rept Beit Ind 1864, p 203 — Hydrophabus nympha, Boulenger, sept tert ind 1865, p. 232—Hydrophobus rympad, Douwsdy, F. B. I. 1890, p. 298—Dypocalamiss sympals Boulenger Cat. Sn. Brit Mus. I. 1893, p. 370, Wall, J. Bombay N. H. S. X. Brit Mus. I. 1893, p. 370, Wall, J. Bombay N. H. S. X. 1995, p. 239, and 8n. Crylon, 1921, p. 169, and 5po Zeyl, 1921, p. 309, and 8n. Crylon, 1921, p. 169.

Hydrophobus semifactohus Qunther, 1862, Ann. Mag Nat Hist (3) ix, p 127, pl 1x, fig 8 (twos loc unknown London) (3) ix, p 127, pl ix, fig 6 (type loc unknown

Odontomus semsfasciatus Gunther, Rept Brit Ind 1864, P 234 Dryocalamus nympha var ceyloneness F Müller, 1887, Verh. Nat

Ges Basel VIII. p 269

Nostril in an undivided nasal, or with a suture extending from it to the first lahial, loreal in contact with the eye or separated from it by a minute preocular, with a larger one above it, 2 postoculars, temporals 2+2, 6 or 7 appraishills. 3rd and 4th touching the eye Scales in 13 rows V 200-236, C 65-88, A 2

Hemipenis extending to the 10th caudal plate, the distal half is strongly flounced, the proximal has large spines arranged in longitudinal series, the line of demarcation between the two being well defined.

Dark brown or black above and on the aides, with white or yellowish cross bars expanding laterally, each bar on the back occupies 3 or 4 scales and is spotted with black, on the hinder part of the body they are often broken up, forming spots on the sides, upper lip, hinder part of head and nape and lower parts, uniform white

Total length of 460, tail 90 mm (520, Wall)

Range Ceylon and Southern India as far north as lat 12° 30' on the Western side, and Orissa on the Eastern (Wall) Found in the plans and in the hills at low altitudes, often entering houses

Russell'a types, two in number, are in the British Museum They are now somewhat faded, but are otherwise in an excellent state of preservation

193 Dryocalamus davisonL

Uses Consontial Banford, 1818, J.A.S. Bengal, xtii, P. 128. (Navalaba H.II. E. of Tavoy. Calcutta), and P. Z. 8. 1881 p. 221—Hydrophobus decisions, Boulenger, F. B. I. 1890 p. 279—Dynocolomus dersoons, Boulenger, F. B. B. 1891 Mat., 1832, p. 274. 1821 p. 1831 Boutlay N. H.S. xxxx 1822 p. 1835. (Smth. J. Nat. Hat Hee Bann, 1. 1814, p. 33, Bourret, Serp. Indo.Calan. Indo Chine, 1936, p 168

Nostril in an undivided nasal, lorest in broad contact with

the eye; no preocular; 1-2 postoculars; temporals 1+2 or 2+2; 7 supralabials, 3rd and 4th touching the eye; scales in 13 rows. V. 233-255; C. 90-108; A. 1.

Hemiponis as in nympha.

Black above and on the sides, with white or pale green, irregular cross-bars, expanding laterally; anteriorly each bar occupies 2-4 scales; on the hinder part of the body they are narrower, closer together and often broken up so that the pattern becomes more or less reticulate; hinder part of head white with a dark median stripe; upper lip and lower parts white; tail heavily speckled with black. In the adult the white cross-bars often have a median stippling of brown.

Total length: 3 920, tail 205 mm.

Range. Siam between lats. 18° and 11° N.; Tenasserim (Tavoy); Burma (Rangoon); Cambodia; Cochin China; Southern Annam.

Found in the lowlands. A captive specimen in Bangkok laid 4 eggs on May 31. They were very elongate, measuring 35×9 mm. in size. Two young hatched out on August 10, and measured 250 mm. in length. Another individual caught in September contained 3 eggs.

194. Dryocalamus gracilis.

Odontomus gracilis Günther, 1864, Rept. Brit. Ind. p. 234 (Anamallays: London).—Hydrophobus gracilis, Boulenger, F. B. I. 1890, p. 298.—Dryocalamus gracilis, Boulenger, Cat. Sn. Brit. Mus. i, 1893, p. 371; Wall, J. Bombay N. H. S. xix, 1909, p. 290, fig. head, and Sn. Ceylon, 1921, p. 169, and J. Bombay N. H. S. xxix, 1923, p. 616.

Odontomus tergusonii Haly, 1888, Toprobanian, iii, p. 51 (Ceylon).

Nasal shield more or less divided into an anterior and postcrior part; loreal in broad contact with the eye, with a small precedular above it, rarely absent; 2 or 3 postceulars; temporals 2+2 or 2+3; 7 supralabials, 3rd and 4th touching the eye. Scales in 15 rows throughout. V. 199-243; C. 75-87; A. 1, rarely 2.

Hemipenis and coloration as in nympha.

Total length: 5 520, tail 110 mm. (620, Wall.)

Range. Peninsular India (Anaimalais, Cuddapah Hills, Berhampore in Orissa); False I., off the coast of Arakan; Ceylon.

A rare species.

Genus SIBYNOPHIS

SUppophis Fitunger 1843 Brit Rept p 26 1870e Herododysts gentimetrif Stringer Proc U.S. Nat Mus xxxvii, 1910, p 162 Pope Rept China, 1935 p 81, Bourel, Sep. Indo-Chine 1930, p 42

Potyodontophus Boulenger 1890, P B I p 301 and Cat Bu. Bint Mas t, 1893, p 161, Wall, Sn. Coylon, 1921, p 82

Teeth very numerous and closely set, equal in size, bayonetshaped 30 to 60 in each maxilla, dentary bone completely detached from the articular posteriorly Head sightly distinct from neck, eye tather large, with round pupil.

Redy ophiagness seales smooth, in 17 rows throughout in all the Oriental species, ventrals rounded, subcardals paired Hypspophyses developed throughout the vertebral

Common characters, unless otherwise stated Rostral broader than high frontal distinctly longer than its distance from the end of the snout, nostral between two nasals, internasals shorter than the prefrontals, I pre- and 2 post oculars genual subequal in size or the anterior pair slightly longer in contact with 4 infralabiais, anal divided

Range The Oriental Region, Madagascar, Central

America Seven species in the Oriental Region A genus of hill enakes, oviparous, laying from 2 to 4 eggs

at a time The d species here described are very closely related to one another, the diagnostic characters between them, apart from coloration, being found chiefly in the scales of the temporal region.

Key to the Species

L. Bultomodals \$4 or more

) anterior temporal, in contact with the 8th labus 10 suprelabusis amornoy temporale, the lower touching

the 7th and 8th inbuse, 9 suprelabilities chimeness p 278 II. Subcaudaly Jess than 80

A hormally 2 anterior temporals

supplicate paretal touches both post no black stripe along the side

of the body supelability personal touches both post-orders a black stope along the aids subprendatus p 279 Sustregalius, p. 278 ocular only parietal touches upper post-Igrahams Ip 250

B Normally I entersor temporal. ? w 3 supralabula , personal touches both .

asquitorrus, p. 280.

collarse p. 277

195. Sibynophis collaris*.

Psammophis collaris Gray, 1853, Ann. Mag. Nat. Hist. (2) xii, p. 390 (Khasi Hills; London).—Polyodontophis collaris, Boulenger, F. B. I. 1890, p. 302, and Cat. Sn. Brit. Mus. i, 1893, p. 184, pl. xii (in part); Annaudale, Rec. Ind. Mus. viii, 1912, p. 46; Wall, J. Bombay N. H. S. xviii, 1908, p. 316, and xix, 1909, pp. 340, 757, and xxix, 1923, p. 598; Fraser, ibid. xxxix, 1937, p. 498.—Ablabes collaris, Stoliezka, J. A. S. Bengal, xl, 1871, p. 430.—Sibynophis collaris, Smith, Bull. Raffles Mus. no. 3, 1930, p. 40, and Rec. Ind. Mus. xlii, 1940, p. 482; Vope, Rept. China, 1935, p. 86, fig. head; Bourret, Serp. Indo-Chine, 1936, p. 43 (in part); Shaw & others, J. Darjeeling N. H. S. xiii, 1939, p. 115.

Loreal squarish or a little longer than high; 10, rarely 9

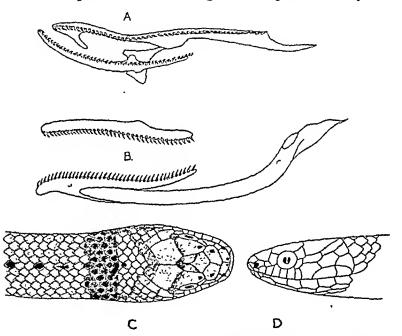


Fig. 94.—Sibynophis collaris. A. Palato-maxillary arch. B. Maxilla and mandible. C. Dorsal, and D. Lateral view of head.

or 11 supralabials, 4th to 6th touching the eye; 1 anterior temporal, in contact with the 8th labial; parietal touches upper preocular only, or is just in contact with the lower. V. 155–186; C. 100–125.

^{*} Schater, List Sn. Ind. Mus. 1891, p. 17, has referred Coluber colubrinus Blyth? to the synonymy of this species. I am unable to find the original description in any of Blyth's papers.

The hemipenis extends to the 9th caudal plate and is not forked the distal is calyculate, the calyces being small and with scalloped edges the provinced is spinose the spines gradually increasing in size those at the base of the organ being very large. In addition the spinose area near the sulcus is divided into two for a short distance by an extension of the calyculate area Pope has stated that the hemipenes of collars and chinensis differ from one another the material at my disposal does not confirm his view

Brown above usually with a vertebral sector of small black spots head with small black spots or vermiculations and two black transverse bars one behind the eyes the other across the occuput name black bordered with yellow behind upper up white or yellow spotted and bordered above with black Lower parts yellowish each ventral shield with an outer black spot or streak anterior ventrals with a pair of median dots in addition

Spec mens from Siam and Annam may have a lateral series of yellow spots on scale-rows 4 or 5 and the Jellow border on the nape may be chevron shaped the spex pointing backwards

Total length 760 tail 235 mm (2) Males are smaller

Range The Himslayes as far west as himls Assam north to the Muhmi Hills Western Yunnan Laos the whole of Burnes and the bully country of Stam Annam the Lange an Plateau and hills W of Hue) Koh Chang in the Bight of Bangkok Cunong Tahan Lahang in the Malay Penthenla

Fairly common in the Eastern Himalayas and Assam ascending to an altitude of 10 000 feet Its chief food appears to be lizards mainly semis Wall records finding a smake to tail in the stomach of one individual blutilated tails are frequent in this species

196 Sidynophis chinensis

Ablabes chimenes Gunther 1889 Ann Mag Nat. Hart (6) iv p 220 (Ichang Hupch London) —Sibynophis chisense Pope Fort Phone, 163.5 p 8° lig head.

Subyraphus collaris singues Bourret 1936 Serp Indo Chine.

p 44 Subgrophie kananensus Schmidt 19°5 Amer Mus Nov no 152 (Nodes, Haman New York)

Similar to collars but with two anterior temporals the lower in contact with the 7th and 8th labials usually only 8 supralabials V 168-183 C 98-122 laght brown above the vertebral series of scales grey with

or without small brick apots head markings as in collars but less distinct

Earge Torg King Haman , S China to Formosa

197. Sibynophis subpunctatus.

Oligodon subpunctatus Dum. & Bibr. 1854, Erp. Gen. vii, p. 58 (Malabar; Paris).—Polyodontophis subpunctatus, Boulenger, F. B. I. 1890, p. 313, and Cat. Sn. Brit. Mus. i, 1893, p. 186; Wall, Sn. Ceylon, 1921, p. 84, fig. head, and J. Bombay N. H. S. xvii, 1907, p. 823, and xxix, 1923, p. 599; Prater, ibid. xxx, 1924, p. 168; Fraser, ibid. xxxix, 1937, p. 470.—Sibynophis subpunctatus, Schmidt, Pub. Field Mus. N. H. xii, 1926, p. 171. Oligodon spinæpunctatus Jan, 1862, Arch. Zool. Anat. Phys. ii, p. 40 (probably Bangalore; Basel).

Enicognathus humberti Jan, 1863, I.c.s. p. 275, and Icon. Gen. xvi, 1866, pl. iv, fig. 1 (Ceylon; Genoa; not seen by me).

Loreal small, longer than high; 9 (rarely 8) supralabials, 4th to 6th (or 3rd to 5th) touching the eye; 2 anterior temporals, the lower wedged in between 7th and 8th (or 6th and 7th) labials; parietal touches both postoculars. V. 157-200 (Ceylon and India, south of Lat. 14°); V. 172-215 (India north of Lat. 18°, Matheran, Nasik dist.; C.P.; Bengal); C. 3, 60-76; \$\, 54-63.

The hemipenis extends to 8th or 9th caudal plate and is not forked; the distal $\frac{1}{3}$ is calyculate, the calyces having scalloped edges; the proximal $\frac{2}{3}$ is spinose, the spines being of almost uniform size and arranged in longitudinal series; from near the base of the organ to near the tip, and in a position almost opposite the sulcus, are two rows of large

spines.

Light brown above, with a vertebral series of black dots; sides of the body often grey, the colour bounded above by a dark line or series of dark spots; head and nape dark brown or black; lips yellow, uniform in specimens from Ceylon, usually spotted in those from India; a yellow transverse bar between the eyes and two broad ones bordering the dark colour of the nape; the dark colour extends forwards bisecting the yellow; yellow below, each ventral shield with a black dot near its outer border.

Total length: 460, tail 100 mm. (\mathcal{P}). Range. As given in the ventral counts.

198. Sibynophis bistrigatus.

Ablabes bistrigatus Günther, 1868, Ann. Mag. Nat. Hist. (4) i, p. 417, and Theobald, J. Linn. Soc. x, 1868, p. 42 (Pegu; London).—Polyodontophis bistrigatus, Boulenger, F. B. I. 1890, p. 304, and Cat. Sn. Brit. Mus. i, 1893, p. 188; Wall, J. Bombay N. H. S. xxix, 1923, p. 600.

Like subpunctatus in scalation, but of different colour pattern and smaller size.

V. 184-186; C. 73-75.

Hemipenis as in subpunctatus.

Light reddish brown above, with a vertebral series of black spots, and a conspicuous black stripe along each side of the body and tail on scale-rows 4 and 5, top of the bead and nape black the dark colour of the former bordered on each side with yellow lips yellow a pair of yellow spots on the

nech lower parts uniform yellow Total length 300 tail 80 mm (V)

Banje Burma (Prome, Pegu) As noted by Wall (1923), Roepstorff's epecunen said to have come from Camorta, in the Nicobars needs confirmation

A rare snake known from a few specimens only

199 (Sibynophis grahami.)

Polyodontophu grahams Boulenger 1904, Ann. Mag hat Hot. (7) xm. p 132 (between Yunnan Fu and Kut ang, Yunnan London - Silymophie grahams, Pope, Rept Chuns, 1935, p 88, for board

Range The Yunnan plateau

200 Sibynophis asgittarius

Culamoria contiersa Center 1839 P Z S p 49 (Tirbut B and O commona contiers Canter 1839 P. Z. S. p. 49 (Firher B and London sketch in Bodlesen Lab). — Polycodmotophie segitariae Boulenger P. B. I. 1899 p. 303 and Cal. Sa. Brit. Miss. L. 1893 p. 187 Wall, J. Bombay N. H. S. zvii. 1901 p. 8°1, and zivi. 1904 p. 20°2.

Encognation grays Jan. 1863, Arch Zool Anat Phys. 11 p 274 and Icon. Cen. xvi, 1865 pl. jii, fig 3 (Humalayas Milan; not

some by me) Encognation proconners Jan. 1883 B. co p 274, and Eve pi 4 (type loe unknown; Weebeden; not seen by me)

bnout broader and more rounded and frontal broader than in the preceding species, loreal small or very small often absent, entirely united with the prefrontal or the poeterior nasal, 7 or 8 supralabials, 3rd and 4th, or 3rd, 4th, and 5th touching the eye, normally one large anterior temporal its lower margin wedged in between the 5th and 7th labials parietal touches both postoculars V 197-238, C 57 70

Light brown above with a vertebral series of black dots. greyah brown on the sides, the colour occupying four scale rows and bordered above with black, bead and nape dark brown or black, with a large clongate oval patch of yellow on each side at the back of the bead snout variegated with yellow a yellow border to the nuchal patch behind hips yellow spotted with black Lower parts yellow, with a black dot on the outer edge of each ventral shield.

There are two specimens in the British Museum, presented by Cantor one of which appears to be the type

Total length 305 tail 250 mm Range North-castern India from the Central and United Provinces to Eastern Bengal. Wall records it from the Western Hunalayas

Genus NATRIX.

Natrix Laurenti, 1768, Syn. Rept. p. 73 (type N. vulgaris= Coluber natrix Linn.); Wall, J. Bombay N. H. S. xxix, 1923, p. 600 (in part); Pope, Rept. China, 1935, p. 89; Bourret, Serp. Indochine, 1936, p. 54 (in part).

Tropidonotus Boie, 1826, Isis, p. 205 (type natrix); Boulenger, F. B. I. 1890, p. 341, and Cat. Sn. Brit. Mns. i, 1893, p. 192.

Rhabdophis Fitzinger, 1843, Syst. Rept. p. 27 (type subminiatus); Wall, l. c. s. p. 604; Bourret, l. c. s. p. 84. Steirophis Fitzinger, 1843, Syst. Rept. p. 27 (type chrysargus).

Nerodia Baird & Girard, 1853, Serp. N. Amer. p. 38 (type sipedon); Watt, I. c. s. p. 602.

Amphiesma Dum. & Bib., 1854, Erp. Gen. vii, p. 724 (type stolatum). Herpetoreas Günther, 1860, P. Z. S. pp. 166, 257 (type sieboldi= platycens).

Fowlea Theobald, 1868, Cat. Rept. Asiat. Soc. Mus. p. 57 (type punctulata).

Bothrodyles Cope, 1886, Pr. Amer. Phil. Soc. xxiii, p. 495 (type subminiqtum).

Geratophallus Cope, 1893, Amer. Nat. xxvii, p. 483 (typo vittata). Diplophallus Cope, l. c. s. (type piscator).

Maxillary teeth 18-35 (for the species included in this work), posterior longest; mandibular teeth subequal; head usually distinct from neck; eye moderate or large, with round pupil. Body more or less elongate, cylindrical; scales in 15-19 rows (for species in the Oriental Region), more or less distinctly keeled, rarely smooth, usually with apical pits; ventrals rounded. Tail moderate or long; subcaudals usually paired. Hypapophyses developed throughout the vertebral column.

Common characters unless otherwise stated :- Eye large, its diameter greater or distinctly greater than its distance from the border of the mouth; nostril in a semi-divided, or complctely divided, nasal; internasals shorter than the prefrontals; frontal 13 to 14 times longer than broad, as long as or a little longer than its distance from the end of the snout; loreal squarish or a little longer than high; 3, rarely 2 or 4, postoculars; 5 infralabials in contact with the anterior genials, which are shorter than posterior; anal divided.

Hemipenis reaching to the 7th or 8th caudal plate, spinose and calyculate throughout, the spines being more or less uniform in size. The lips of the ealyces are short or very short, the spines originating within the cup; at the base of the organ there are from 2-4 large or very large spines.

Range. Asia and the East Indian Islands; the north coast of Australia; Europe; Africa; North America. Some 80 species are known: 50 of which inhabit Asia and the Oriental Region.

I have maintained Boulenger's grouping of the species within the genus, as it presents the most ready means of identification. On the whole it is a fairly natural one although weakened by many exceptions. The extremes or end-forms

of each group are easily recognized, but there is no clear line of demarcation between them, one merging gradually into the other \ parallela is a case in point To overcome the difficulty, in some cases of ascertaining the type of dentition, and to facilitate identification, Boulenger supplemented his key with a table of the numbers of shields and scutes of the various species (Cat En L p 199) I have adopted the same

In the hatrax group the teeth form continuous series, in Rhabdophis there is usually an interval between the enlarged posterior teeth and those that immediately preceds them, as a rule, the greater the enlargement of the teeth the longer the interval In a dolate there may or may not be an interval according to the individual, this species also combines the dentition of Phablophis with the nasal characters of Acrons The \airx type of dentation is the most primitive , Rhaldophis, a polyphyletic assemblage has been derived from it, and, in their turn, Pseudozenodon, Macropisthodon, and Balanophis

I have examined the type of Phayren scalelling Theobald Cat Rept Mus Assat Soc Bengal, 1868, p 51, said to have come from Bassem, Burma and regard it as conspectfic with

the South American Lygophie fineatus (Linn)

The following species have been met with just within the limits of the area covered by this work, or just outside They are entrants from other regions and do not properly belong to the Indian Indochinese fauna. The Chinese species have been dealt with by Pope (1935) and a full account of them will be found in his work The two Malayan forms are referred to under modesta

Naires aquefamate Berbour 1908 Bull, Mus Comp. Zool b p 317 Fore Rept China, 1935, p 93 (Hannan and Southern China)

Notice johannes Bouleager 1908, Ann. Mag hat, Hat. (8) il. P 31st Pape C. e. p 106 (Yunnan and Western Camaloure evidences Bouleuger 1904, Ann. Mag Nat. Has to 17 12 (Pape 1904, Ann. Mag Nat. Hat (1) (Pape 1904, Pape 1904, Pape

Notes poper Schmadt 1935 Amer Mus hove no 157, p. 3, Pope, Le s p 123 (Haman and Southern Churs)

Not is \$1.20 (Gaussian and Sanda and Sanda Sanda

Key to the Species.

 Posterior maxillary teeth gradually en- larged; internasals broadly truncate 	
anteriorly; nostrils lateral (Natrix).	
	nuchalis, p. 284.
B. Scales in 17 rows; no nuchal groove.	
V. 158-172; C. 117-140 V. 166-176; C. 84-106 V. 118-126; C. 61-73; T. 1+2 V. 129-146; C. 54-77; T. absont	v. venningi, p. 286. v. laronensis, p. 286. sauteri, p. 287. atemporalis, p. 287.
C. Scales in 19 rows; subcaudals paired or some of them single. Maxillary teeth 20-24; 8 supralabials Maxillary teeth 25; 7 or 8 supralabials Maxillary teeth 26-30; 9 supralabials.	parallela, p. 288. nicobarensis, p. 289.
a. Labials black with light contresb. Labials whitish, the margins edged with	khasiensis, p. 289.
black, or almost entirely black or brown. Maxillary toeth 19-21; 9 supralabials; anal	modesla, p. 290.
entire	peali, p. 291.
D. Subcaudals all single. Maxillary teeth 22-23; 9 supralabials	xenura, p. 292.
II. Posterior maxillary teeth gradually en- larged; internasals distinctly narrowed anteriorly; nostrils directed slightly upwards (Nerodia).	
A. Scales in 17 rows.	
Scales smooth	
	punciulata, p. 292.
B. Scales in 19 rows, keeled. a. 22-28, maxillary teeth; two oblique black stripes from the eye b. 30-34 maxillary teeth; no stripes from	punctulata, p. 292.
B. Scales in 19 rows, keeled. a. 22-28, maxillary teeth; two oblique black stripes from the eye. b. 30-34 maxillary teeth; no stripes from the eye. anterior temporals; 3 labials touch the eye;	
B. Scales in 19 rows, keeled. a. 22-28, maxillary teeth; two oblique black stripes from the eye. b. 30-34 maxillary teeth; no stripes from the eye. 2 anterior temporals; 3 labials touch the eye; V. 86-96	piscator, p. 293. trianguligera, p. 298. percarinata, p. 299.
B. Scales in 19 rows, keeled. a. 22-28, maxillary teeth; two oblique black stripes from the oye b. 30-34 maxillary teeth; no stripes from the oye. 2 anterior temporals; 3 labials touch the eye; V. 86-96	piscator, p. 293. trianguligera, p. 298.
B. Scales in 19 rows, keeled. a. 22-28, maxillary teeth; two oblique black stripes from the oye b. 30-34 maxillary teeth; no stripes from the eye. 2 anterior temporals; 3 labials touch the eye; V. 86-96 2 anterior temporals; 2 labials touch the eye; V. 70-85 1 anterior temporal; 3 labials touch the eyo III. Last 2 or 3 maxillary teeth abruptly enlarged; internasals broadly truncate anteriorly; nostrils lateral (Rhabdophis). A. A nuchal groove. a. Scales in 15 rows. Nuchal scales enlarged, V. 117-126; C. 39-46.	piscator, p. 293. trianguligera, p. 298. percarinata, p. 299. bellula, p. 298.
B. Scales in 19 rows, keeled. a. 22-28, maxillary teeth; two oblique black stripes from the oye b. 30-34 maxillary teeth; no stripes from the eye. 2 anterior temporals; 3 labials touch the eye; V. 86-96	piscator, p. 293. trianguligera, p. 298. percarinata, p. 299. bellula, p. 298.
B. Scales in 19 rows, keeled. a. 22-28 maxillary teeth; two oblique black stripes from the oye b. 30-34 maxillary teeth; no stripes from the eye. 2 anterior temporals; 3 labials touch the eye; V. 86-96 2 anterior temporals; 2 labials touch the eye; V. 70-85 1 anterior temporal; 3 labials touch the eye; V. 70-85 III. Last 2 or 3 maxillary teeth abruptly enlarged; internasals broadly truncate anteriorly; nostrils lateral (Rhabdophis). A. A nuchal groove. a. Scales in 15 rows. Nuchal scales enlarged. V. 117-126; C. 39-46. b. Scales in 19 rows. Nuchal scales (3 median rows) narrower than	piscator, p. 293. trianguligera, p. 298. percarinata, p. 299. bellula, p. 298.

COLUBRIDE.

,1

B No muchal gland or groove; erales in 19 rows. a Internassia much marrowed

antenerly , 2 light strepes down the back b Internanals not markedly

narrowed anterporty light stripes down the back stolates, p. 303.

platyceps p 305

Address, p 308.

negrocancia, p. 307

montrola, P 308.

chrys=74. P 303

estadrone p. 302

19 21 maxillary teeth c. More then 25 maxillary terth

One anterior temporal C 63-63 One anterior temporal C #4-97 V 130-144 -...

Two agterior temporals Two anterior comporate S suprelabile, no muchal gland 1 150-165

Two anterior temporals, 8 supratabale, a

nuchal gland, V 152-159 201 Natrix puchalis

Tropodonotus seradonus, var Güntber, 1992, Arm Mag Nat, Hist.

Tropidoatus mechalis Boulenger, 1891, Ann. Mag. Nat. Hat. [6] 100. n. 227 thanks (6) vv. P 351 (hamd on (sunther a specimers), and Cat St. Brit Mus 1 tan.

19; vo. p. 25f (based on founther a specimens), and O.S. con-Brit Mus i. 1973. p. 212. pl. Min. Rg. 1.—harms suchair Parker Ann. Mag. Ast 11ast (9) 57. 1975. p. 479. g. and Googf Journ. London 1973. p. 479. and P. Z. S. 1975. p. 599 fg., and Per Bod Hus. 21st 1940. p. 432, Apps. Rept. Unns. 1913. a. 10. a. 21st 1940. p. 432, Apps. Rept.

Dans 1935 p 108 fg back.

Asiar learner Wall, 1933 J Rombay N II, 8 x115, Pp 1935,

Asiar learner Wall, 1933 J Rombay N and xxx.

1935,

603 (Smlum Raba, N Burma, London), and xxx.

Notes North Schmidt, 1923, Amer Mus. Nov. ac 157, p. 2 (Scow Mis Yunna, New York) Asser Nuchair College York, 1927, Zool, Ana. Leeping, Inc., 1412, p. 231 (Truman)

hairs sustaines muchain and N o lamords Bourret, 1936, Berr

Indochuse, pp 56, 57

A nuchal gland (sacculated type), a nuchal groove, the scales on each aide of it more or less distinctly calarged and paired [fig 6, p 17] Maxillary teeth 18-23, gradually enlarged posteriors posteriorly, nostrila lateral, intermanala trumcate anteriorly I percenter, temporals 1+1 or 1+2; 6 supralabala, 3rd and
the construction 4th touching the eye, 5th longest , & infralabilite touching the anterior general anterior genule, which are broader but shorter than the posterior Body rather stort Scales in 17, rarely 19, rows on the neck, 15 rarely 17, at mid body, more or less distinctly keeled execution. keeled except the outer row, which is smooth V 139-160. C & 52-65, Q 41-52

Hempens to the 11th-14th candal plate, forked near the

Olivaceous or greenish above, the scales sometimes edged with black, an indistinct dorso lateral chain of small yellow spots sometimes present, pale greenish below, uniform, or

Table of Dental and Scale Counts.

										_											_					
	Temp.			Absont	1	۱	~	-	63	10) c	40	1 C	4 6	4 ~	C	N	- (*1	-	lor 2	lor 2	1 or 2	63	67	for 2
	Lab.	6 (3-4)	1 (4 0) L	6 (3-4)	8 (3-5)	7 or 8	9 (4-6)	9 (4-8)	9 (4-6)	0 (4-6)	(4 4)		0 0	(A.A.)	(2)	() () ()	() () () () () () () () () ()	(X-0)	0-00	8 (3-6)	8 (3-5)	8 or 9	8 or 9	8 (3-5)	9 (3-6)	8 (3-5)
1000	Cand.	41-65	61-73	64-77	73-108	120	94-110	83-132	75-77	82-105	70-83	70-07	86-96	70-85	78-83	79-95	3	£72-807	72-06	08-90	201-00	98-70	8007	78-92	84-101	79-86
Total of the control	Vent.	139-160	118-126	129-146	163-172	160	145-155	148-168	142-144	158-165	134-164	128-158	134-146	133-147	139~144	157~176	117~126	(144-104)	(167~173)	177-917 (999)	140 160 1	150 170	27-201	150-144	150-100	RC1-7C1
	So.	16	::	17	19	61	9;	07	19	10	- 22	19	13	19	10	19	15	19		200	200	10	202	10	10	04
	Max, teeth.	18-23	22-24	28-30	20-24	22.50	87-07	78-37	12-21	22-23	26-30	22-28	32-34	30-34	32-34	26-29	22-23	24-20	21-94	19-21	28-34	27-29	33-35	27-35	27-35	
	Species.	I. nuchalis	sauteri	atemporalis	parallela	Throwarehara	wordstar	money.	Treating to the second		Tr. Dancantata	piscalor	trianguingera	percarmata		LALL nimalayana	angelt	subminiata	stolata	platyceps	beddomei	nigrocincta	monticola	chrysarga	callichroma	

the scales spotted or edged or thickly powdered with black, particularly on the posterior part of the body and tail; a complete yellow collar present in the young

Total length 9 900, tail 160, & 865, tail 145 mm

Range Upper Burma (Bhamo district, Nam Tamai and Adung Valleys), S.E. Tibet (Di chu Valley); Yunnan, Tong King (Col des Nuages), Western China

A hill species found generally at high elevations, 5,000-5 000 feet Apparently common in some districts

202 Natrix venningl

Notrix venning: Wall, 1910 J Bombay N H S xx, p 345 (Chin Hills, Burma, London), and xxix, 1923 p 601, and xxix, 1926, p 860, Venning, ibid xx, 1911, p 773

Natur sugmenter Wall 1925, J Bombay N H. S XIX, p 588 pl (Huton Bharno, London) Natur sensing toronness Smath, Rec Ind Mus xlu, 1940,

Natric venning taronenes Smath, Rec Ind Mus xhi, 194
p 482 (Pangnarodim London)

Manillary teeth 27-32, gradually enlarged poetenorly, nostrils lateral or directed sightly upwards, internsals truncate and stightly narrowed anteriorly, as long as the prefrontals, usually 2 preceders, temporals 1-1 for 1+2; 8 synrabials, 4th, 6th and 6th touching the eye Body slender, scales in 17 rows, feebly keeled, the outer ross amooth

The hemipenis extends to the 8th caudal plate, not forked Total length \$605, tail 195; \$680, tail 225 mm

Two races can be distinguished -

Y 168-172. C 117-140

Very dark graph frown above, with an indistinct chequeing of small squarish black spots, a dorso-lateral chain of yellow spots in the spots of the s

Range Upper Burms (Chm Hills, Bhamo district, Nam ti

A hill form Wall records finding tadpoles in the atomach of one individual

Differs from the typical form in having fewer caudal shields, 84-106. V. 166-178

Dark vi 100-176

Dark v

Described from 10 specimens obtained by Mr. Ronald Kaulback at Pangnamdim (lat. 27° 42′ N.; long. 97° 54′ E.) and Aliwang, Taron Valley (lat. 27° 42′ N.; long. 98° 08′ E.), places north-east of Fort Hertz, Upper Burma.

Most of them were caught in small mountain streams.

203. Natrix sauteri.

Tropidonotus sauteri Boulenger, 1909, Ann. Mag. Nat. Hist. (8) iv. p. 495 (Formosa; London).—Natrix sauteri, Pope, Rept. China, 1935, p. 125, figs.; Bourret, Serp. Indochine, 1936, p. 58, fig. head.

Maxillary teeth 22-24, gradually enlarged posteriorly; internasals truncate anteriorly, nearly as long as the prefrontals; temporals 1+2; 7 supralabials, 4th and 5th touching the eye. Body rather stout; scales in 17 rows, feebly but distinctly keeled, the outer row smooth. V. 118-126; C. 61-73.

Greyish-brown above, with a dorso-lateral series of small, light (reddish in life), black-edged spots, which disappear on the posterior part of the body; lower parts whitish (? reddish in life), with a large black spot at the outer margin of each ventral shield, the spots forming a continuous line and separated from the colour of the back by a slightly lighter interval; head reddish-brown above, labials white, edged with black, the white colour continued backwards as a line on to the nape and converging towards its fellow.

Total length: 400, tail 105 mm. (3).

Range. Tong-King (Tam-dao); S. China; Formosa.

Not uncommon at Tam-dao, according to Bourret. The above description is drawn up from his material in Paris.

204. Natrix atemporalis.

Natriz atemporalis Bourret, 1934, Bull. Gen. Instr. Pub. Hanoi, December, p. 75, fig. (Tong-King; Paris), and Serp. Indochine, 1936, p. 59, figs.

Maxillary teeth 28-30, gradually enlarged posteriorly; internasals truncate anteriorly, nearly as long as the prefrontals; temporal absent, or a minute one, between the 5th labial and the parietal; 6 supralabials, 3rd and 4th touching the eye. Scales in 17 rows, distinctly keeled, the outer row smooth. V. 129-146; C. 54-77.

Reddish-brown above, the scales finely edged with black, and with two light, dorso-lateral lines or series of spots present or absent; whitish below, with a black spot at the outer margin of each ventral, these sometimes confluent with the colour of the back.

Total length 390, tail 115 mm. Range. Tong-King (Tam-dao).

205 Natrix parallela.

288

Tropidonotus dipsus (non Blyth) Anderson, 1879 Anat & Zool.

Res Yunnan p 819 (Yunaan; London) F B L p 345, and Tropudonotus parallelus Boulenger 1890, F B L p 345, and Cat Sn Brit Mus t, 1893, p 223 (n part), Wall J Bomby N H 8 xvis, 1903, p 316 fig head, and xx, 1909 p 340 Natra porallela Wall, J Bomby N H 8 xxix (1902 p 50) (in part); Smith, Rec. Ind Mus. xhs., 1940, p. 481; Shaw & others, J. Darjeeling N. H. S. xis., 1939, p. 116
Noire: biteriola: Wall 1935 J. Bornbay N. H. S. xxi., p. 806
Noire: biteriola: Wall 1935 J. Bornbay N. H. S. xxi., p. 806
(Ext. bt. 2) 501.

(Kut kai, N Shan States: London), and xxxi, 1926 p 560; Pope Bept China, 1935, p 99 Natrix clerki Wali, 1925 J Bombay N II S xxx, p 809 (Kachin

Hills, Burms; London) and xxxi, 1925, p 550 Tropidonotus chrusergus (non Boie), Boulenger, 1890, F B I

p 345 and Cat Sn Brit Mus i 1893 p 258 (in part)

Maxillary teeth 20 to 24 gradually, sometimes rather abruptly, enlarged posteriorly, nostris lateral, 1, sometimes 2, preoculars, internasals truncate anteriorly, temporals 1+1 or 1+2, 8 supralabals, 3rd, 4th and 5th touching the eye slender, scales in 19 rows, the tips more or less distinctly bidentate, more or less strongly keeled V 163-172, C 73-108

Hemipenis to the 8th candal plate, forked at the tip Olive brown or greyth brown above, the scales sometimes black edged, and with 2 light, more or less distinct dorsolateral black edged stripes or series of spots along the back and tail, a short yellow, vertebral streak behind the occuput a light chevron shaped mark on the nape pointing backwards present or absent, a black streak from the eye to the angle of the mouth, labials yellow, uniform, or the shields edged with black, ventrals and subcaudals uniform yellow or with a black dot on each side, top of head brown.

Total length of 570, tail 140, 9 635, tail 135 mm.

Range Sikkum, Assam, Upper Burma, as far south as lat 22°, Yunnan, Tong King (Fan Si Pan Mts)

Rurma

Wall (1925) has distinguished his bitsmala (range Burma and Yunnan) from parallela (range E Himalayas and Assam) on the grounds that the former has teeth of the Nairez type, the latter of the Rhabdophis type It is true that there are differences, but I do not find them as great as be makes out The degree of enlargement of the posterior teeth does not vary greatly in the two forms, but while in bits nucle there is no interval between the last two teeth and those that precede them, in parallela there is The difference might be considered

Pore (1925) Pope (1935) dealing with this problem writes, "Finding myself unable, through lack of sufficient material, to deter mine definitely the relation between bitemate, parallela and octolmenta, I am treating them all as distinct species believe, however, that a thorough study will make it necessary

289

to change this arrangement. N. octolineata appears to be little more than subspecifically distinct from bitaniata, which in spite of Wall's contentions, seems to be of uncertain status in relation to parallela,"

206. Natrix nicobarensis.

Tropidonotus nicobaricus and nicobarensis Sclater, 1891, J. A. S. Bengal, lx, pp. 231, 241, 250, pl. 6 (Nicobars; Calcutta); Boulenger, Cat. Sn. Brit. Mus. i, 1893, p. 192.—Tropidonotus nicobariensis, Annandale, J. A. S. Bengal, 1905, pp. 174, 175.—Natrix nicobariensis, Wall, J. Bombay N. H. S. xxix, 1923, p. 601.

Maxillary teeth about 25, gradually enlarged posteriorly; nostrils lateral; internasals truncate anteriorly; 1 pre- and 3 postoculars; temporals 1+2; 7 or 8 supralabials, 3rd and 4th, or 4th and 5th touching the eye. Scales in 19 rows, all strongly keeled. V. 160; C. 120; anal entire.

Greenish-olive above, with 3 light, black-edged stripes. The vertebral stripe extends the whole length of the body and tail and is strongly edged with black; the outer stripes, on scale-rows 2 and 3, do not extend beyond the body and are edged with small black dots; lower parts white; lips white; a dark temporal streak from behind the eye; parietals with a pair of small white spots.

Total length: 250, tail 177 mm.

Known only from the type-specimen, a juvenile. The jaws are damaged and it is not possible to count the number of teeth accurately, but the specimen otherwise is in a good state of preservation.

It was collected by Mr. de Roepstorff and was said to have

come from Camorta in the Nicobars.

207. Natrix khasiensis.

Tropidonotus khasiensis Boulenger, 1890, F. B. I. p. 344 (Khasi Hills; London), and Cat. Sn. Brit. Mus. i, 1893, p. 223; Annandale, Roc. Ind. Mus. viii, 1912, pp. 49 and 53; Wall, J. Bombay N. H. S. zviii, 1998, p. 317.—Natrix khasiensis, Wall, J. Bombay N. H. S. zviii, 1998, p. 317.—Natrix khasiensis, Wall, J. Bombay N. H. S. zviii, 1998, p. 317.—Natrix khasiensis, Wall, J. Bombay N. H. S. zviii, 1998. N. H. S. xxix, 1923, p. 601, and xxxi, 1926, p. 559; Bourret, Serp. Indochine, 1936, p. 69, fig. head; Smith, Rec. Ind. Mus. xlii, 1940, p. 483.

Natrix gilhodesi Wall, 1925, J. Bombay N. H. S. xxx, p. 587, pl.

(Huton, Bhamo; London).

Maxillary teeth 26 to 28, gradually enlarged posteriorly; nostrils lateral; internasals truncate anteriorly; I or 2 postoculars; temporals 1+1 or 1+2; 9, rarely 8, supralabials, 4th, 5th and 6th touching the eye. Body slender; scales in 19 rows, more or less strongly keeled, except the outer row, which is smooth or feebly keeled. V. 145-155; C. 94-110.

Hemipenis as in parallela.

VOL. III.

Dark greyish or blackish-brown above, with or without indistinct light dorso lateral stripes or series of spots ; rentrals and subcaudals yellowish, the notes margins brown like the dorsal scales, or with a brown spot; top of head with high vermiculations and usually 2 small spots, one on each ade of the interparietal auture; labiate white or yellow in the middle, black on the borders, the yellow colour of the lips may be continued backwards as a series of spots on each ade of the neck

Total length & 570, tail 195; 9 800, tail 190 mm. Range Aream (Khasi and Garo Hills); Upper Burma (Abor country, Nawng Bkai in the Nam Tamai Valley; Bhamo district! Tong King (Chapa, Tam-dao)

Common in the Kharl and Kachin Hills

208 Hatrix modesta.

Terroduce orderes Gouther, 1815, P. Z. B., p. 252 (Kheil Hills, London); Anderson, Anal. Lool. Res. Tennas, 1879, p. 817, London; P. J. 1900, p. 243, and Les Sa. Brit Mai, 1, 1904, p. 244, and Les Sa. Brit Mai, 1, 1904, p. 244, and Les Sa. Brit Mai, 1, 1904, p. 249, and Les Sa. Brit Mai, 1, 1904, p. 249, and Les Sa. Brit Mai, 1, 1904, p. 249, p. 249, p. 18, 242, 1904, p. 255, p. 249, p. 18, 242, 1904, p. 255, p. 256, p P 635, and xxxx, 1928, p. 850

Trapelonomy (sharmy from Bler) Smith, 1921, P Z. S. p 424 Nones desclaimment Taylor, 1934, Pr. Aug. Sci Philad irrevi P 300 (Chieng Mai, N. Slam; not seen by me).

Maxillary teeth 28 to 32, gradually enlarged posteronly, nostrib lateral, internamia as long as or pearly as long as the prefrontale, truncate anteriorly; usually 2 precomiars; temporals 1+1 or 1+2; normally 0 supralability, 4th, 8th and supralability, 4th, 8th, and 6th touching the eye Scales in 10 rows, feely or distinctly keeled, the outer I to 3 rows smooth, V and C.

Hemipenis se in parallela

Brown above with small black spens regularly arranged and a domo-lateral series of small yellow spots which may be united to form an indistinct stripe; lower parts yellowing with blad one an indistinct stripe; lower parts yellowing with black spots on the sides of the ventrals, sometimes forming commons fines (Upper Burms, Cambodis, Annam), or with the median parts of the ventrals with small black of the ventrals. dots (Rachin Hills), or with 3 series of squarish black spots almost entirely covering the ventrals (N Stam), or with the ventrals almost entirely powdered with black (Khasi Hills and the most entirely powdered with black (Khasi Hills and the most share head and the Transle! a yellow stripe on each side of the head starting from behind the eye and converging towards its fellow but the converging towards its converging fellow on the neck, labule edged with black; top of head with indistinct vermiculations

Total impet 6 550, tail 185, 9 600, tail 140 mm

Range. Assam (Khasi Hills); Upper Burma (Kachin and Bhamo districts); N. Siam; Cambodia (Kamchay Mts.); S. Annam (Langbian Plateau); Upper Laos (Chieng-Khoung) fide Angel. Found in the hills at between 2,000 and 5,000 feet altitude.

Natrix modesta, as I conceive it, is a widely distributed and very variable species. The variations in ventral colouring have already been given. The ventral and caudal counts are shown in the following table:—

Locality.	Ventrals.	Caudals.	No. examined
N. Siam, Burms, Assam	148-168	110-132	19
Kamchay Mts., Cambodis	154-167	98-110	
Langbian Plateau Isthmus of Kra (N. groundwateri).	149-154	83-104	Ć
	147-154	120-132	6
Pon. Siam and Malay Peninsula (N. incs)	143-148	96-109	4

The caudal counts, owing to the number of docked tails, are far from complete. For comparison the counts of N. inas and N. groundwateri are included, as they are undoubtedly very closely allied to, if not racial forms of, modesta. In one example of N. groundwateri the anal plate is divided, in the remainder it is entire.

209. Natrix peali.

Tropidonotus pealii Sclatet, 1891, J. A. S. Bengal, lx, p. 241, pl. vi, fig. 4 (Sibsagar, Assam; Calcutta); Boulenger, Cat. Sn. Brit. Mus. i, 1893, p. 214.—Natrix pealii, Wall, J. Bombsy N. H. S. xxix, 1923, p. 600.

Maxillary teeth 19 to 21, gradually enlarged posteriorly; nostrils lateral; internasals truncate anteriorly, distinctly shorter than the prefrontals; 1 pre- and 2 or 3 postoculars; temporals 2+2; 9 supralabials, 4th and 5th touching the eye, the 6th excluded by the lowest postocular. Scales in 19 rows, strongly keeled, except the outer row, which may be smooth; all the caudal scales strongly keeled. V. 142-144; C. 75-77, the anterior 4 to 7 single; A. 1.

Hemipenis extending to the 9th caudal plate, not forked. Dark brown above, with a narrow light dorso-lateral stripe and a broader pale one occupying scale-rows 1 and 2; below dark brown, each ventral and caudal shield with a yellow spot at the outer margin, and an indistinct yellow median series of spots; head dark brown above, the rostral and labials

yellow, edged with brown.

Total length 525, tail 130 mm. Known only from two specimens, both males.

210 Natrix xenura.

Tropidanoius zentra Wall, 1907, J Bombay N H S, xvii p 815 (type-locality not known; type lost), and Rec Ind. Mos in 1909, p 145 -A airsz zonueus, Wall, J Bombay N H.S xxx, 1923 p 601

Maxillary teeth 22 or 23, gradually enlarged posteriorly, nostrils lateral, internasals as long as or shorter than the prefrontals, I pre and 3 postoculars; 9 (10) supralabials, 3rd and 4th touching the eye, temporals 2+2 Scales in 19 rows, all strongly Leeled V 158-105, C 82 (9) to 105 (3).

all entire , A entire or divided

Hemipenis extending to the 8th caudal plate, not forked. Dark olive-brown above with indistinct narrow blackish cross bars or series of spots, interrupted on the dorso-lateral line by white (or yellow) spots, whitish or yellowish below with dark brown squarish spots at the outer margins of the ventrals, tail more thickly spotted, labials white, the sutures black-edged, a white streak from behind the single of the mouth on to the neck

Total length & 630, tail 190 . 9 590, tail 160 mm ; another female is 660 mm in total length, but has lost a considerable

part of the tail

The type is lost , three more specimens were discovered in 1911 by Wall in the Indian Museum, labelled modera, to which species it bears considerable resemblance in general coloration They are from Cherrspung; in the Kham Hills, A+sam

211 Ratrix punctulata.

Propolentus punctulatus Ganthers, 1858, Cal. Col. Sa. Brit. Mar. 1911 Bygo locality unknown. London); Dolenters, P. B. I. 1859. Bygo locality, P. B. I. 1859. Bygo locality, P. B. I. 1859. Bygo locality, P. B. B. L. 1859. Bygo locality, P. B. B. L. 1859. P. 173.—herology punctulata, Wall, J. Bombay N. H. B. L. 1859. P. 173.—herology punctulata, Wall, J. Bombay N. H. B. 1859. L. 1879. Austi Eo. Mun. 2012. Bygo locality, property Thomball, 1859. Cal. Rept. Assat Eo. Mun.

p 57 (Bangoon, Calcutta)

Maxillary teeth 26 to 30, gradually calarged posteriorly nostrils directed slightly upwards . interpasals much narrowed antenorly, as long as the prefrontals, frontal constricted in the middle, twice as long as broad. I preocular, temporals 2+3. 9 supenlabrals, 4th and 5th touching the eye, 6th excluded by the lowest postocular Body moderately stender; scales in 17 rows, all smooth \ 134-154 , C 70-83

Hemipenis as in piscutor but with only two longitudinal folds Brown or black above, with small pale markings or dots, two outer rows of scales, ventrals and subcandals yellowish, with dark margins . upper bp uniform yellowish , frequently a light, curved, longitudinal streak on each side of the nape

Total length & 640, tail 145 , 9 630, tail 160 mm

Range. Tenasserim; Lower Burma (Pegu, Watiya, Rangoon, Amherst).

Largely aquatic in its habits; Keswal records that it enters salt water.

212. Natrix piscator.

CHECKERED KEELBAOK.

Russell, 1796, Ind. Serp. i, p. 25, pl. 20 ("Paragoodoo"); p. 33, pl. 28 ("Naugealled Keaka"; Ganjam); p. 38, pl. 33 ("Neeli Koea"); ii. 1801, p. 5, pl. 3 ("Doobleo"); p. 6, pl. 5 ("Dora"); p. 16, pl. 14 ("Ourdia"; Bombay); p. 17, pl. 1, fig. 5 A ("Noor Pamboo"; Tranquebar and Ourdia; Bombay).

Hydrus piscator Schneider, 1799, Hist. Amph. i, p. 247 (East Indies; based on Russell's "Neeli Koea").—Tropidenotus Indies; based on Russoll's "Neeli Koea").—Tropidonotus piscator, Boulengor, F. B. I. 1890, p. 349 (in part), and Cat. Sn. Brit. Mus. i, 1893, p. 230; Wall, J. Bombay N. H. S. xvii, 1907, p. 857, col. pl., and xviii, 1908, p. 317, and xix, 1909, p. 611, and xxvi, 1919, p. 560; Smith, J. Nat. Hist. Soc. Siam, i, 1914, p. 14; De Rooij, Rept. Indo-Austral. Archipel. ii, 1917, p. 76, fig.—Nerodia piscator, Wall, J. Bombay N. H. S. xxix, 1923, p. 603, and Sn. Coylon, 1921, p. 91; Prater, J. Bombay N. H. S. xxxii, 1927, p. 225, and xxx, 1924, p. 167; Fraser, ibid. xxxix, 1937, p. 467, pl. vii.—Natrix piscator, Popo, Rept. China, 1935, p. 120, fig.; Shaw & others, J. Darjeeling N. H. S. xiii, 1939, p. 117; Bourret, Serp. Indo-Chine, 1936, p. 75. Chine, 1936, p. 75.

Hydrus palustris Schneider, 1799, Hist. Amphib. i, p. 247 (based on Russell's "Paragoodoo"). Coluber anostomosatus Daudin, 1803, Hist. Nat. Rept. vii, p. 140

(based on Russell's "Neeli Koea"

Coluber braminus Daudin, l. c. s. p. 176 (subst. name for palustris). Coluber umbratus Daudin, l. c. s. p. 144 (based on Russell's "Doublee "}.

Coluber mortuarius Daudin, I. c. s. p. 187 (based on Russell's

" Naugalled Koaka

Coluber dora Daudin, I. c. s. p. 191 (based on Russell's "Dora"). Tropidonolus melanzostus Boie, 1826, Isis, p. 206 (Java); Boulenger, Cat. Sn. Brit. Mus. i, 1893, p. 230.

Coluber bengalensis Gray, 1834, Ill. Ind. Zool. ii, p. 82, figs. 1-3

Coluber rectangulus Gray, l. c. s. figs. 4-6.

Tropidonotus quincunciatus Schlegel, 1837, Phys. Serp. ii, p. 307, pl. 12, figs. 4, 5 (India).

Amphiesma flavipunctatum Hallowell, 1860, Pr. Acad. Sci. Philad.

p. 503 (Kwangtung Prov., China). Tropidonotus tytleri Blyth, 1863, J. A. S. Bengal, xxxii, p. 88

(Andaman Is.: type lost).

Tropidonotus striolatus Blyth, 1868, in Theobald's Cat. Rept. Mus. Asiat. Soc. p. 55 (Andaman Is.: type lost), and Rept. Brit. Ind. 1876, p. 175.

Tropidonotus quincunciatus var. Günther, 1858, Cat. Sn. Brit.

Mus. p. 66 (Kashmir; London).

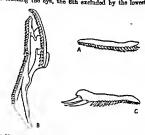
Tropidonotus sancti-; ohannis Boulenger, 1890, F. B. I. p. 350, and Cat. Sn. Brit. Mus. i, 1893, p. 230, pl. xv, fig. 1 (based on Gunther's var.).

Tropidonotus asperrimus Boulenger, 1891, Ann Mag. Nat. Hist.

(6), vis. p 281, and Cat Sn Best, Mus. i, 1893, p 232, pl. xv, fig 2 (Coylon ; London)

Natruz psecutor psecutor, Smith, Peo. Ind Mus. xin, 1940, p. 483. Tropidonotus piscutor, vers unucotor, lateralus, puncianus, obscurus, note Wall, 1907, J Bombay N H. S rvii, pp 860-863 Names proposed by the author to differentiate his colour forma

Maxillary teeth 22 to 28, gradually enlarged postenorly; nostrals directed slightly upwards; frontal constricted in the muddle, twice as long as broad, internacals much narrowed anteriorly, as long, or nearly as long, as the prefrontals; 1 preocular, temporals 2+2 or 2+3; 9 supralahials, 4th and 5th touching the eye, the 6th excluded by the lowest post-



Pig 95 -A. Maxilla and B. palato maxillary arch of Notice pression C Marilla of Natrax subministic.

ocular Body rather stout, scales in 19 rows, more or less distinctly keeled, except the outer one or two rows which are smooth. V 122-158; C (60) 70-67.

Hemipenis extending to the 12th caudal plate, forked for about one-third of its length, it is spinose throughout, the spines being relatively coarser at the distal end than at the proximal, extending for the greater part of its length are four prominent folds, there are no basal spines

Total length & 990, tail 310; Q 1200, tail 300 mm

Four fairly well defined races can be distinguished, each with its own geographical range The typical form of each is described, but departures from it are not uncommon

I. Natrix piscator piscator.

1. Scales more or less strongly keeled. Yellowish or olivaceous above, with black spots quincuncially arranged;

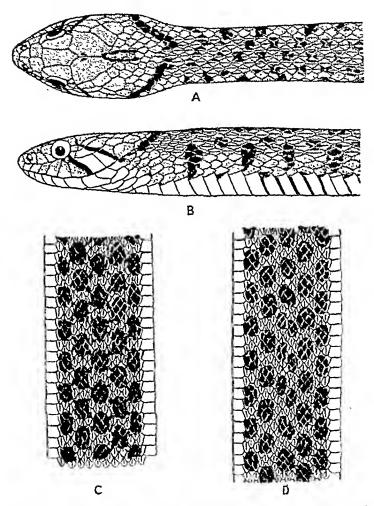


Fig. 96.—Natrix piscator. A. Doreal, B. Lateral, view of head (B.M. 39.7.1.5); C. and D. Dorsal pattern of N. p. piscator.

belly uniform whitish or yellowish; head olive-brown above, with two oblique black streaks, one below, the other behind, the eye. The dorsal spots are arranged in five series, namely,

a vertebral, 2 dorso-lateral and 2 lateral Together they form a chess board pattern They may be small or large, sometimes so large that they occupy most of the back, the saske then appearing black, with small yellowish spots, the dorso lateral series being the most conspicuous. The black spots are arranged in transverse series of 5 [fig 96 C) or 6 (fig 96 D). the 6th being formed by division of the vertebral one The number is not constant throughout the body and usually varies at different levels The outer row is usually larger than the others, the spots there forming short transverse bars

Range The whole of India to Baluchistan and the NWF Provinces extending into the Indo Chinese region as far east as Myrtkina in Upper Burma bee also under melan-osius

2 Scales feebly keeled, sometimes almost smooth Pale olive above, uniform or with black spots quincuncially arranged, or with two series of whiteh spots along the body, bely uniform yellowish (sancts polannis) A pale form derived from the provious one by a general reduction of the colour pattern Range The Himalayas , North West and Central Provinces,

II Natres pescator flarepunciala

Scales more or less strongly keeled Olivaceous above, with black spots quincuncially arranged, belly whitish or 3 ellowish, the ventrals edged with black head as in I The spots in this form are never large, as they may be in Form 1, and they may be broken up and confined to the edges of the scales, forming a reticulate pattern. In transverse series there are 6 or 7 the 7th being formed by division of the vertebral spot small yellow spots, either as a dorso-lateral series or a reticulate pattern, present or absent, this colour being largely on the interstitual skin

Range The Indo-Chinese region as far west as Assam

Haman , Hong Kong Southern China

Upper Buems , Yunnan , Upper Lacs

In this form, and in I, a considerable amount of red or scarlet coloration in life is often present. It is confined chiefly to the interstitual skin of the fore body and shows up best when the snake, under excitement, dilates itself

III hatrix piscator asperrimus

boales very strongly keeled V 131-146, C 73 93 Anterior half of body pale olive or reddish, with two series of more or less distinct, large, roundash or rhombodal, after nating, dark brown, black edged spots, which are partly confinent on the man black edged spots, which are partly confinent on the vertebral bas and may form a annuous stripe hinder part of body dark chive, usually with blackish spots quincincially arranged, sometimes a series of yellow dorsolateral spots, belly whitish or yellowish, head as in I Range Ceylon.

IV. Natrix piscator melanzostus.

Pale, olivaceous, with 5 (4 on the neck) dark brown or blackish longitudinal stripes, extending the whole length of the body; the vertebral and dorso-lateral ones are more or less united and form a broad stripe, the intervening light area being inconspicuous; belly whitish or yellowish; head brown above; a black subocular and a postocular stripe, the latter bordering the brown on the temple. This colour form closely resembles the one that is found in the Malay Archipelago (Java, ? Borneo) and in which the five stripes may be quite distinct. It is the tylleri of Blyth, and the striolatus of Theobald, and is figured by De Rooij under the name of N. piscator.

A second colour form, found also in the Andamans, resembles the large-spotted Indian form (fig. 96 C); the vertebral series of spots may be united to form a sinuous stripe on the fore-part of the body. This variety may be quite distinct, or combined with the other, being then like melanzostus on the anterior

part of the body and piscator on the hinder part.

The production of the stripes is effected by the fusion of

the dorsal spots in longitudinal scries.

The evolution of certain forms of colour pattern is well shown in Natrix piscator. The production of an extra spot, as in 6 from 5, is not just a doubling of the vertebral spot. It is brought about by a shifting of the pattern of the entire half of the body at that point. It may be either forwards or backwards; it may be a gradual change or an abrupt one. In snakes which have annulate markings this shifting is clearly seen, some of the annuli being broken exactly in the middorsal and mid-ventral lines, so that the snakes appear as if formed of the right and left halves of two individuals.

Russell has given 7 figures of this snake, all showing the chequered type of pattern. In vol. i, pls. 20 and 28 and vol. ii, pl. 15 the spots are small: in vol. i, pl. 33, they are of medium size; in vol. ii, pls. 3, 5 and 14 they are large or very large.

Wall (1907 and 1921) has given excellent accounts of the habits of this eommon snake. It is essentially a snake of the plains, and of the hills at low altitudes. In Siam it is one of the commonest snakes in the rice fields and is seldom found far from water, to which it takes readily. It is diurnal in its habits and is extremely active in its movements; it bites fiercely when first caught but is quickly tamed. When cornered in the fields I have seen it spring at the aggressor, the whole snake leaving the ground in its fury. It feeds upon frogs and fish, making enormous meals of the latter when they get herded into small pools at the end of the dry season. Breeding appears to take place over the greater part of the year. Wall states (1921), "with the exception of the Python

and Russell's Viper it is the most prolific snake I know". The number of eggs is said to range from 3 to 57. In southers India it services towards the end of the hot weather, in the northern parts it hibernates during the cold weather,

213 Natrix trianguligera

Treptimetus transpilgerus Boss, 1827, Isst. p. 335 (Jerei, Bricherer, Cat. Sn. Bris. Mas. i., 1893, p. 124, and Fassal Bris. 1812, p. 123, Anderson, J. Lenn, Soc. 3rd, 1839 p. 335; Science, J. & Bongal h., 1891, p. 242.—Kerri A. B. Bergal h., 1891, p. 242.—Kerri A. B. J. Bergal h., 1891, p. 242.—Kerri A. B. J. Bergal h., 1891, p. 242.—Kerri A. B. Stan, p. 601.

Manillary teeth 32 to 34, gradually enlarged posteroity, mostral directed algabily upwards; microassis distinctly composed anternoity, sometimes truncate, longer than the perfonate, in precentar, temporals 2+2, sometimes 1+2, 5 augustabata, 4th, 6th and 6th tosehong the eye between 1 to 3 augustabata, 4th, 6th and 6th tosehong the eye distinct outer 1 out 1, scales in 19 rows, strongly keeled, except the outer 1 out 1, scales in 19 rows, strongly keeled, except the outer 1 out 1, scales in 19 rows, strongly keeled, except the

Hempens to the 6th candal plate, forked at the extreme up Dark clove above with small black goods and a latest street of large triangular once, the points of which extend on an sometimes across, the ventrals; in the young they are strongly marked, but gradually become indistinct with are and in old individuals may be hardly distinguishable, a formation of the control of the present; lower parts pallow, they reflow, the shelds sometimes deed with black

A Malayan species that extends its range into the Indo-

Chances region, as far north as Biergul.

The two following species are very closely allied to it and appear to be its northern representatives, N beliefs on the Biermese side, N perconnection on the Chances.

214 Hatrix bellula

Tropidonous beliefus Stolicaka, 1871, J.A. B. Bengal, 21, pt 2. p. 522, pl. 2773, fig. 2 (Prome, near Pegu, type lott), Theolodi, Oak Repk Birst Ind 1878, p. 176, Boulenger, F. B. I. 1893, p. 350

Topidoness transpliquess, Boulonger, Cat. Sp., Brit. Moz. 1893 k. p. 224 (sp. pars) — Nasrus errorgeliquess, Wall, J. Bombey N. H. S. XIX., 1928, p. 569)

Manillary teeth 32 to 34, fundably enhanced posterorly; nostrile directed algebra universal attention attention of the control of the control

Remipens to the 8th candal plate, not forked.

Dark olive-green above with indistinct black spots quincuncially arranged, and a dorso-lateral series of light spots or short cross-bars; lips white, the sutures edged with black, the white extending as a vertical bar in front of and behind the eye; sides of the neck and fore part of body with white vertical bars; ventrals white, the shields heavily edged with black.

Total length: 500, tail 145 mm. (3).

The type is lost, but a half-grown individual, agreeing in all essential particulars with Stoliczka's description, was obtained recently near Rangoon by Prof. F. J. Meggitt, Wall (1926) records a snake, from Minhla, Thayetmyo district, which is presumably this species.

215. Natrix percarinata.

Tropidonotus percarinatus Boulenger, 1899, P.Z.S. p. 163, pl. 17, fig. 2 (N.W. Fukien; London).—Natrix percarinata, Smith, J. Nat. Hist. Soc. Siam, vi, 1923, p. 201, and Rec. Ind. Mus. xlii, 1940, p. 483; Parker, Ann. Mag. Nat. Hist. (9) xv, 1925, pp. 302 and 304; Pope, Rept. China, 1935, p. 116, pl. vi.—Natrix annularis percarinata, Bourret, 1936, Serp. Indochine, p. 80.

Maxillary teeth 30 to 34, gradually enlarged posteriorly; nostrils directed slightly upwards; internasals distinctly narrowed anteriorly, usually longer than the prefrontals; 1 preocular; temporals 2+3, rarely 3+3; 9 supralabials, 4th and 5th touching the eye, 6th excluded by the lowest postocular.

Body rather stout; scales in 19 rows, strongly keeled, the outer row sometimes smooth. V. 133-157: C. 68-85, for

specimens from the Indo-Chinese region.

Hemipenis extending to the 8th caudal plate, forked near

the tip.

Young: dark olive-green or grey above, the colour descending on the sides of the body as V-shaped bars, often continued round to form complete bands; lower parts and intervals between the bars on the sides of the body yellow. Adult: olivaceous or greyish above, uniform or with dark reticulations or with dark cross-bars enclosing lightish spots; laterally they just reach the ventrals and are edged in front and behind with white; they may or may not bifurcate; whitish below, with or without indistinct dark cross-bars.

Total length: 3 720, tail 190; 2 940, tail 270 mm.

Range. Upper Burma (Gole Tutap) and Suprabum in the Triangle; N. Siam (Doi Su-tep); Tong-King; Annam (Kontum); Hainan; Southern China; Formosa.

N. percarinata, according to Pope, inhabits the watercourses in forested, hilly country. It feeds upon frogs and their larvae, fish and crustacea. From 4 to 12 eggs are laid at a time.

300

hatriz (Rhablaphia) angel i Bourret 1934 Buill Gen, Instr Pub Hano April p 151 (Tam-dee Tong King Paris) - Rholdephis angel Bourret Sorp In lochuse 1938 p 102, fig head

A nuchal groove and gland the scales on each side of the groove distinctly enlarged and paired. Maxillary teeth 22 to 23 the last two abruptly and very strongly enlarged nostrils internasals as long as the prefrontals 1 pre- and 3 postoculars temporals 1+2 6 supralab als 3rd and 4th touch ng the eye 5th very large scales in 15 rows throughout

feebly keeled the outer rows smooth 1 117 126 C 39-46 Brownish above with a dorso lateral series of small reddish spots best marked anter only a pale (orange in hie) A shaped mark on the 1 ch its apex forwards top of head brown i ps lighter a black spot below the eye another at the angle of the mouth lower paris anteriorly pale orange speckled with brown the colour rapidly increasing in amount so that the hinder parts are entirely brown

Total length 430 tail 70 mm

Known only from the type locality

This very dust not spec en comb nes the dental characters of subminiata with the nuchal scale characters of n chalis

217 Natrix himalayana

HIMALAYAN KEELBACK

Trapshacotar A radiayanas Gunther 1854 Bept Brit End.
Proc pt n. n. fig 14 (* Shama and Argan London). For
proc pt n. n. fig 14 (* Shama and Argan London). For
processing the state of the P Z S 1938 p 879 and Rec Ind Mus xin, 1940 p 483 Shaw & achiem & Darperling h II S xin, 1939 p 120 Tropulanotus h sala ser us col var arratus Wall 1905, J Bambay

11 8 x u p 319 (Khar Halle)

Valrix spreadur Wal 19°5 J Bombay N H S xxx, p 33 (Huton Kachin Hills London) and xxx 10°6 p 561

A nuchal groove more or less distinct the three median rows of scales of that region narrower than the others the vertebral row sometimes hidden between the two adjacent rows Max llary teeth 2r to 29 the last two strongly and abre ptly enlarged nostnis lateral 1 preocular temporals 2+2 or 2+3 8 supralabals 4th and 5th touch og the eye Body rather stout scales in 19 rows strongly keeled those of the outer row feebly keeled 1 151 178 6 79-95

Hemipenus extend ng to the 7th caudal plate not forked is spinose throughout the spines being of rather large size

and longer at the distal end than at the proximal end; at the base of the organ on either side of the sulcus are two

enormous spines.

Olive above with small black spots, and two dorso-lateral series of small yellow spots or narrow cross-bars, rarely absent; lower parts yellowish, speckled with brown or black or nearly entirely greyish or blackish; a yellow or orange collar usually interrupted in the middle and succeeded by a dark cross-bar or triangular patch; labials yellow with black sutures; sometimes two oblique black bars, one below, the other behind the eye; neck and fore-body sometimes with a reticulation of black and yellow, the colours confined very largely to the interstitial skin.

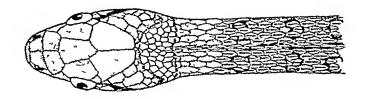




Fig. 97.—Natrix himalayana. (B.M. 67.7.22 1.)

Wall, writing of his colour variety ornatus, states:—"All the specimens were remarkable for the brilliancy of their adornment. Besides the conspicuous yellow or orange collar with its broader posterior black border, these specimens were ornamented behind the yellow with an intensely brilliant chequering of vermilion, more or less apparent in the anterior half of the body, but reducing in brilliancy from before backwards."

Total length: 3 820, tail 215; \$ 1250, tail 305 mm.

Range. The Eastern Himalayas as far west as Sikkim; Assam; Upper Burma, north to lat. 27° 42′ and as far south as lat. 22° N.

Kaulback obtained two specimens in the Triangle on July 24th in copula.

218 Natrix subminists

REG NECKED KEELBACK

Tropicinos as rubo nontest Schlegel, 1877. Thyp Serp. 11, 2013. (Java, Le Jos) Boulonger, F B Wall, J Bornbary, J H and Gas Li Holland, J Bornbary, J H & San, Li Holland, J Bornbary, M H & San, Li Holland, J Bornbary, M H & San, Li Holland, J Bornbary, M H & San, Li Holland, J Bornbary, J H & J Bornbary, J Bornbary, J H & J Wall, J Bornbary, J H & J Wall, J Bornbary, J Bornbary, J H & J Wall, J Natriz eubminiata, Birnith P Z B 1936, p 579, Shaw &others,

J Darjoeing N H S xm, 1979, p 122 Natrus beller Schmidt 1925, Amer Mus Nov., no 157 (Nodos, Haman, N York) - Natrix subminista kelleri, Pope, Rept. China, 1935, p 132, fig , Smith, Roc Ind Miss xxxvii, 1935, p 239, and zin 1940 p 483

Natrix enhannels hangkongenes and N. s erammers Mell, 1931, Lingson Sc. Journ. vist, p 203 (Hongkong and Stam), Greentt, Peking Nat Hut Hull zv, 1941, p 187

Natrax (Riabdophie) kashaorness Bourret, 1934, Bull. Gen. Instr Pub Hanci, May, p. 169 (Lao bao, Annam; Paris) —Rhotdo-phu himologique laobaccusis, Bourret, Sorp Indochues, 1936, p 90, fig bead

A nuchal groove and gland, the scales on each side of the groove being distinctly enlarged and paired in the northern form (kelleri), less distinctly, sometimes not at all, in the southern (typica) Maxillary teeth 24 to 26, the last two abruptly and very strongly enlarged (fig 95 C, p 294), nostrils lateral, internasals as long, or nearly as long, as the prefrontals; I preocular, temporals 2 +2 or 2+3; normally 8 supralabials,

3rd, 4th and 5th touching the eye Body rather stout; scales in 19 rows, strongly keeled, the outer row smooth. Hemipenis extending to the 15th caudal plate, forked for

nearly I of its length , there are no basal spines

Olive brown or greenish above, almost uniform or with black and yellow reticulations, the colour being confined to the interstitual skin and the edges of the scales, an oblique black har below the eye, belly yellowish, sometimes with a black dot ou the outer end of each ventral shield, neck in life tinged with vermilion, the colour confined chiefly to the interstitial skin, young with a jet-black cross-bar or triangular mark on the nape, bordered with yellow behind.

Range The whole of the Indo-Chinese subregion as far as Sikkim in the north-west; southern China, Hainan, Hong-

Kong, the Malay Penmsuls and Archipelago

Two forms can be defined, a smaller southern form (s subminista) and a larger northern one (s hellers) Morphologically they appear to intergrade completely with one another, but the extremes differ so much that they might well be regarded as distinct species. The boundary line between the two is not clear; I tentatively place it at lat 22° N

N s hellers does not range south of this line, but N s.

subminsata often occurs north of it.

Natrix subminiata subminiata.

V. 144-164; C. 72-89. Total length: & 750, tail 185; 2 750, tail 180 mm. Colour as described, the subocular bar usually very distinct. The nuchal groove and enlarged nuchal scales are not conspicuous, and in specimens from the extreme south of Indo-China are usually entirely absent.

Specimens from Malaya not included.

II. Natrix subminiata helleri.

V. 157-173; C. 72-96. Total length: 3 950, tail 235; 2 1300, tail 300 mm. Adults may be almost uniform in coloration; the belly is powdered with grey, and the subocular bar is indistinct or absent. The nuchal groove and enlarged paired scales are always distinct; juveniles are coloured like the typical form.

N. subminiata is found both in the plains and in the hills. Wall states that it is uncommon in the plains in Burma, but is common in many of the hilly districts. Exactly the reverse obtains in Siam, where it is one of the commonest of snakes in the great central plain north of Bangkok, but almost unknown in the hilly districts.

In Siam it is diurnal in its habits, and is very active; although it will bite freely when first caught, it quickly becomes tame. It feeds chiefly on frogs and toads. When excited it will erect the body and flatten the neck in a marked

manner.

219. Natrix stolata.

STRIPED KEELBACK.

Coluber stolatus Linn. 1758, Syst. Nat. 10th Ed. p. 219 and 12th coluber stolatus Linn. 1758, Syst. Nat. 10th Ed. p. 219 and 12th Ed. 1766, p. 379 (Asia; Stockholm); Russell, Ind. Serp. i, 1796, pp. 14, 15, pls. x, xi (Ganjam); Andersson, Bin. Sven. Vet. Akad. Handl. Stockholm, xxiv, (4) 6, 1899, p. 12.—Tropidonotus stolatus, Boulenger, F. B. I. 1890, p. 348, and Cat. Sn. Brit. Mus. i, 1893, p. 253; Wall, J. Bombay N. H. S. xvi, 1905, p. 302, and xviii, 1907, pp. 108 and 205, and 1908, p. 320, and xix, 1909, p. 615, and xx, 1911, p. 603, col. pl., and xxvi, 1919, p. 562.—Rhabdophis stolatus, Wall, Sn. Ceylon, 1921, p. 105, and J. Bombay N. H. S. xxix, 1923, p. 605; Prater, ibid. xxx, 1924, p. 168; Fraser, ibid. xxxix, 1937, p. 469; Bourret, Serp. Indochine, 1036, p. 92.—Natrix stolata, Pope, Rept. China, 1936, p. 128; Cochran, Proc. U.S. Nat. Mus. 1xxvii, 1930, ii, p. 24; Shaw & others, J. Darjeeling N. H. S. xiii, 1939, p. 121.

Elaps bilineatus Schneider, 1801, Hist. Amphib. ii, p. 299 (India). Tropidonotus stolatus var. erythrostictus Wall, 1911, J. Bombay

N. H. S. xx, p. 606. ? Tropidonotus ruficeps Peters, 1869, Mon. Akad. Berlin, p. 444 ("California").

Maxillary teeth 21 to 24, the last two strongly and abruptly enlarged; nostrils directed slightly upwards; internasals much narrowed anteriorly, as long, or nearly as long, as the prefrontals frontal constricted in the middle, twice as long as broad 1 preocular temporals 1+1 or 1+2, normally 8 supralabials 3rd 4th w l 5th touching the eye 19 rows strongly keeled except the outer row which is smeoth the tips more or less distinctly bidentate V 118-158, C 50-89

Hemipenis extending to the 5th candal plate, forked at the extreme tip it is spinose throughout, the spines being closely

set and of almost equal size there are no basal spines

Olive greenish or frownish above with black spots or reticulated cross hars intersected by two dorso-lateral yellow or buff stripes on the hinder part of the body the stripes are best marked and the black spots least evident, the green colour being almost uniform dark olive lower parts whitish sometimes with a small black spot on the side of each ventral shield top of head olive uniform or the shields edged with black hips yellowish the colour extending up as a vertical bar in front of and behind the eye, this shields may or may not be edged with black In the newly born the light dorselateral stripes are replaced in the fore part of the body by a series of spots

Wall (1911) describes two colour forms as follows -Forma typica The margins of the scales, especially towards their bases are adorned with blue-grey or pale blue. The colouring is concealed when the snake is quiescent and only comes into view when the snake under excitement inflates It is most conspicuous, and may be confined to the anterior part of the body. This is the common type and may be met with anywhere

Var erythrosticius In this the far more beautiful variety, bright vermilion replaces the blue adornment of forma typica it is also more extensively distributed and is more or less evident in the quiescent state Specimens so ornamented have a speckling of the same hue on the belly, and in some the throat is yellow or orange

This variety is very local and appeare to be confined to the

coastal areas Total length o 720, tail 180 9 620, tail 170 mm

Range Ceylon the whole of India to Sind and the N W F P (Wall), southern China Haman, Indo-China as far south

as lat 14° N , the Andaman Is I am unable to find any authentic proof that this anale occurs in Southern Indo-China or in any part of the Malayan subregion. In Burma it is recorded from Tenasserim, but without precise locality I have seen specimens from Central Siam (Lopburi Chamat Paknampo Gengkoi Krabin) Bourret states that it is common in Tong King but that he has not obtained it in the southern parts of French Indo-China,

the records from the Malay Peninsula are old and have never been confirmed.

Wall (1911 and 1921) has given excellent accounts of this little snake, and the following remarks are taken mainly from his articles.

It is common in many parts of Ceylon, India and northern Indo-China, inhabiting both the plains and the hills to altitudes of 5,000 and 6,000 feet. It is diurnal in its habits and of gentle disposition, never attempting to bite when handled. It feeds mainly on frogs and toads. In India it astivates towards the end of the dry season, re-appearing as soon as the monsoon breaks. In northern India it hibernates during the cold weather. Mating appears to take place during astivation, and the eggs, usually from 5 to 10 in number, are laid during the months from May to September. The hatchlings measure from 130 to 170 mm. in length.

220. Natrix platyceps.

Tropidonotus platyceps Blyth, 1854, J. A. S. Bengal, xxiii, p. 297 (Assam and Darjeeling; Caloutta); Boulenger, F. B. I. 1890, p. 343; and Cat. Sn. Brit. Mus. i, 1893, p. 248; Wall, J. Bombay N. H. S. xix, 1909, p. 340; Annandale, Rec. Ind. Mus. 1912, p. 49.—Rhadophis platyceps, Wall, J. Bombay N. H. S. xxix, 1923, p. 604.—Natrix platyceps, Shew & others, J. Darjeeling N. H. S. xiii, 1939, p. 118.

Herpetoreas sieboldii Gunther, 1860, P. Z. S. p. 156 (Himalayas : London).

Zamenis himalayanus Steindochner, 1867, Sitz. Ber. Zool. bot. Ges. Wien, xvii, p. 513, pl. xiii, fig. 1 (Himalayas: Vienna; not seen by me).

Tropidonotus chrysargus, (non Boie) Wall, 1907, Rec. Ind. Mus. i,

Tropidonotus firthi Wall, 1914, J. Bombay N. H. S. xxiii, p. 186 (Chittong, Nepal; Calcutta).—Rhabdophis firthi, Wall, ibid. xxix, 1923, p. 606.

Maxillary teeth 19 to 21, last two fairly strongly and abruptly enlarged; nostrils lateral; I preocular; temporals 1+1, rarely 2+2; 8 supralabials, 3rd, 4th and 5th touching the eye. Body slender; scales in 19 rows, more or less distinctly keeled, those of the outer rows often smooth. V. 174-217 (232); C. 86-107. In one of the types the anterior 4 subcaudals are single.

Hemipenis extending to the 8th caudal plate, not forked. Coloration very variable. Olive-brown above, with small black spots; rarely a dorso-lateral series of white spots; frequently two white black-edged parallel lines, or an elliptic mark, on the nape, or a white black-edged streak on each side of the head or a black line from eye to gape; lips white or rellow, belly yellowish, with or without blackish dots, bordered

Vot. m.

of elongate blackish spots along each side of the belly; lower surface of tail frequently mottled with blackish, throat sometimes black I have examined the types of Natrix firths, both hatchlings, and regard them as conspecific with N. platyceps

Total length & 880, tall 225, 9 735, tail 165 mm

Range The Himalayas from Kashmir in the west to Assam (Abor and Khası Hills) in the east A common snake in the Darjeeling district at between 5,000 and 6,000 feet

221 Natrix heddomet.

Spilotes vittatus Beddome, 1863, Madras Journ. Med Sci vt. p 43 (Nilgris London) Tropulomotus heddomes Gunther, 1864, Rept Brit Ind. p. 269,

pl xxu, fig E (nom now for satisface prece); Boulenger, F.B. L 1890, p 344 and Cat Sn. Brit Mus i, 1893 p 252; Wall, J Bombey N 11 S zzvi, 1919, p 560 - Rhabdophie baddomit, Wall, thid xxix, 1923, p. 605

Maxillary teeth 28 to 34, the last two abruptly and fairly strongly enlarged, nostrils lateral, 1 preocular; temporals 1+1 or 1+2, rarely 2+2, 8 or 9 supralabials, 3rd to 5th or 4th to 6th touching the eye Body slender; scales in 19 rows, more or less distinctly keeled, the outer one or two rows

smooth V 140-150, C 62-82 Hemipenia extending to the 12th caudal plate, forked near

the tip Olive brown or brown above; a series of yellow spots, each one between two black spots or short transverse bars, along each side of the back , belly whitish, uniform or closely dotted with brown on the sides, labials yellow, the sutures edged with black, an oblique, yellow, black-edged streak

from the eye to the gape usually present

Top of head in the young very light brown, speckled with dark brown on the vertex, and with a white or yellow transverse bar behind the parietals, in adult life the head becomes entirely brown, but the transverse har usually persists

In the young the yellow spots upon the back are more in evidence than the black ones, in the adult the reverse is the case In aged individuals the markings may be almost enturely lost, the back then being almost uniform brown in colour

Total length · & 525, tail 140 , Q 690, tail 210 mm

Range The Western Ghats south of Mahahleshwar (lat 17° N) Wall states that it is common in the Nilgins and the Wynaad at between 3,000 and 7,000 feet 1t feeds chiefly upon frogs and toads.

222. Natrix nigrocineta.

Tropidonotus nigrocinctus Blyth, 1856, J. A. S. Bengal, xxiv, p. 717 (Pegu, Burma; Calcutta); Boulenger, F. B. I. 1890, p. 346, and Cat. Sn. Brit. Mus. i, 1893, p. 255; Smith & Kloss, J. Nat. Hist. Soc. Siam, i, 1915, p. 244; Smith, ibid. iv, 1922, p. 206.—Rhabdophis nigrocinctus, Wall, J. Bombay N. H. S. xxix, 1923, p. 606; Bourret, Serp. Indochine, 1936, p. 91.—Natrix nigrocincta, Smith, P. Z. S. Ser. B, 1938, p. 579.

Tropidonotus eisenhoferi Gyldenstolpe, 1916, Kungl. Sv. Vet. Ak. Hand. Stockholm. lv, p. 11, fig. (Muang Fang, N. Siam; Stock-

holm),

Pseudoxenodon fruhstorferi Werner, 1925, Sitz. Ber. Akad. Wiss. Wien, exxxiv, p. 49 (Siam; Vienna); Smith, Ann. Mag. Nat. Hist. (10) i, 1928, p. 496 (=nigrocinctus).

Maxillary teeth 27 to 29; the last two strongly and abruptly enlarged; nostrils lateral; 1, sometimes 2, preoculars; temporals 2+2, rarely 1+2; 9, sometimes 8, supralabials, 4th to 6th touching the eye. Scales in 19 rows, with bidentate tips, all distinctly keeled except the outer row, which is usually smooth. V. 150-170; C. 80-97.

Hemipenis extends to the 8th caudal plate, forked for half

its length.

Olive-green above on the anterior part of the body, browner posteriorly, with or without narrow black cross-bars, sometimes interrupted on the mid-line; whitish below, uniform or powdered with grey, or almost entirely grey, or whitish anteriorly, grey posteriorly; lips white with two black oblique stripes, one below the eye, the other from behind the eye to the angle of the mouth; nape and hinder part of head white in the young, edged with black in front, and with a broad black bar or chevron behind; the outer parts of the chevron may persist as an oblique bar on each side of the neck.

Total length: 3 880, tail 255; \$ 840, tail 185 mm.

Range. Tenasserim and Burma as far north as Thandaung, Toungoo district; the whole of Siam. Bourret records it from Tong-King.

Natrix nigrocincta is widely distributed in Siam. I obtained specimens from three well-separated localities, and have

recorded the following variations (1922).

Northern Siam and Pegu.

1 preocular. V. 161-170; C. 83-96. Adults with distinct cross-bars (13 exs.).

Peninsular Siam.

1 preocular. V. 150-157; C. 72-82. Colour as in the northern form (5 exs.).

S.E. Siam.

2 preoculars. V. 156-164; C. 74-84. Cross-bars indistinct or absent (4 exs.).

I kept two individuals for some months. They were active, graceful snakes of durinal habita. They fed upon frogs and fish picking the latter out of the water, and bolting them with great randity.

223 Natrix monticela

Tropolonous montrelus Jerdon, 1853, J.A.B. Bengel, xxii p 520 (Wyned typolont)—Tropolonous montrole, Bodienson, F.B. I. 1899, p 345, and Cat. Sti. Brit. Sizu. 1, 1831, p 253, Wall J. Bombey N. H. S. xxxi., 1918, p 562—Rhodophu mencada, Wall bulk. xxii, 1923, p 697.

Maxillary teth 33 to 35, the last two abruptly and strongly calarged northel biteral. I procentar, temperals 2+3 expraishes 3rd, 4th and 5th touching the eye Body rather stout scales in 19 rows, all distunctly keld except the other row which may be smooth. V. 130-144, C 78-22

Hemipenis extending to the 9th caudal plate, forked near the tin

one up Green above, with broad black cross-bars or quadrangular black spots, interrupted by two series of light doesolated proter of line. I lower parts white, a white or yellow lice or collar across the back of the head, a white dot on each side of the frontal pre and postoculars and labula below

the eye white throat and sudes of neck yellow in life
Total length J 390, tail 118, 9 475, tail 150 mm

Range The Western Chata from Taleradi, Goa Frontier, to Travancore A comparatively rare species

224 Natrix chrysarga

Trepulorous argument Bose 1827, 1 ms. p. 53 (Java mos said).
Scholey! Bryther ps. 1837, p. 315, pl am. fig. 5a. Theorems. 1837, p. 315, pl am. fig. 5a. Bet finance for the said Rept Made Pen 1922, p. 127 — Elekkaphte drysenyu Wali J Benbay N H 8 xxxx 1823, p. 606 finance for the said Rept Made Pen 1922, p. 127 — Elekkaphte drysenyu Wali J Benbay N H 8 xxxx 1823, p. 606 finance for the said Rept Made N Fare (2) – 1829, p. 607 — Elekaphte for the said N H 8 xxxx 1823, p. 605 — Elekaphte for the said N H 8 xxxx 1823, p. 605 — Elekaphte for the said N H 8 xxxx 1823, p. 605 — Elekaphte for the said N H 8 xxxx 1823, p. 605 — Elekaphte for the said N H 8 xxxx 1823, p. 605 — Elekaphte for the said N H 8 xxxx 1823, p. 605 — Elekaphte for the said N H 8 xxxx 1824, p. 605

Maxillary teeth 27 to 35, the last two abruptl) and farly strongly enlarged notrils lateral, 1 procedular, temporals 2+2 or 2+3, rarely 1+2, 9 suprabables, 3rd to 5th touching the eye, usually 6 infralablash touching the anterior genulabody leinder, scales in 19 rows, all more or less strongly

Hempens to the 8th caudal plate, forked near the tup

Olive brownish, greenish or greyish above with a dorso-

lateral series of short white or yellow transverse bars, edged outside and connected across the vertebral line, with black; lower parts whitish, usually with a black spot at the outer margin of each ventral shield (specimens from the Malayan region may have the ventrals heavily spotted with black); lips white, the colour continued backwards and forming a chevron upon the nape, this mark always distinct in the young; supraorbital shield sometimes white.

Total length: 3 650, tail 145; 2 715, tail 195 mm.

Range. Tenasserim and Siam as far north as lat. 19°;

Kamchay Mts., Cambodia; the Malayan region.

As shown on pp. 288 and 305, the Himalayan and Hainan records of this snake are not correct, and in consequence its range is here much restricted.

I have not seen the specimens recorded by Angel from

Chicag-Khoung, in Upper Laos.

225. Natrix callichroma.

Natrix chrysarga callichroma Bourret, 1934, Bull. Instr. Gen. Pub. Hanoi, April, p. 155 (Ba-vi, Tong-King; Paris).—Rhabdophis chrysargus callichromus, Bourret, Serp. Indochine, 1936, p. 191. Natrix auchenia Smith, 1939, P. Z. S. p. 580 (Hainan; London).

Like chrysarga in dentition and general scalation, differing as follows:—8 supralabials, 3rd, 4th and 5th touching the eye, and in the coloration of the head and neck. V. 152-159; C. 79-86.

Greyish-olive above, with indistinct, narrow black, transverse bars, intersected on the dorso-lateral line by short, whitish bars; lower parts whitish, lightly powdered with grey; lips white; a light patch on the head and nape

immediately behind the parietals.

In addition there is a nuchal gland. The scales of the neck are not altered in shape or size, but on stretching the skin of that part, two parallel longitudinal areas of naked skin are exposed, the condition being as shown in the figure of Balanophis ceylonensis, p. 310. The areas are separated from one another by three series of scales and extend over a length of 9 scales; they are present in the type but cannot be found in the paratype of auchenia, nor in the type of callichroma. Beneath the naked areas lies the gland (sacculated type).

Range. Hainan (Five Finger Mountains); Tong-King

(Ba-vi). Known from three specimens, all males.

I have examined the type of N. chry. callichroma in Paris and regard it as identical with my N. auchenia. The species has particular interest in that it combines the gland of the sacculated type with the external skin characters of the non-sacculated type.

Genus BALAKOPHIS.

Tropidonatus Boulenger 1890 F B I p 341, and Cat Sn. Bnt Mus 1 1893 p 192 Rhabdoptus Wall 1923 J Bombay N H S p 604

Balanophie Smith 1938 P Z S p 553 jtype Tropidonetes ceylon

ense Günther)

Maxillary teeth 24 to 26 followed by two enlarged, curved, grooved teeth anterior mandibular teeth feebly enlarged. Head distinct from neck eye large, with round pupil. Body moderately elongate scales in 19 rows, all except the outer row, strongly weeled ventrals rounded, tail moderate Hypapophyses developed throughout the vertebral column A nuchal gland of the non sacculated type

A single species

226 Balanophis ceylonensis

Trapidonotus chrysorpus sar orphonensa Gunther 1838 Cat. Col. Robert San Brit Mos p 71 (Coylon, London) — Tropidonotus expensa Gunther Rept Brit Ind 1834 p 235 pl xxii, 16 0, 1800 cmss Gunther Rept Brit Ind 1834 p 25 pl xxii, 16 0, 1800 cms Coylon, 1931 1839 p 237 — Rehabsplate resplonense Malli, 2011 Corpor, 1931 p 103 and J Bombay N H S EXIX 1923 p 605, Balmophis ceylonenes Smith, P Z 8 1938, p 553

Aostral between two masals, internasals shorter than the prefrontals frontal longer than its distance from the end





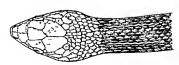


Fig 93 -Balanophia cevlonensi A Maxilla B Head and neck, showing areas of naked slott.

of the snout; 2 pre- and 3 postoculars; temporals 2+2 or 2+3; 8 supralabials, 4th and 5th touching the eye; 4 infra-labials touching the anterior genials which are shorter than the posterior. V. 131-141; C. 40-54; A. 2.

The nuchal gland extends to about the level of the 15th ventral plate; the elongated areas of naked skin which overlie

the gland are separated by 5 series of scales.

Olive-brown above, with more or less distinct reticulated, black cross-bars enclosing a dorso-lateral series of large yellow or reddish, black-edged spots; whitish or yellowish below, the tail speckled with grey; lips whitish; a dark brown stripe from behind the eye on to the neck. Interstitial skin scarlet, the colour showing up when the snake inflates its body.

Total length: 3 500, tail 110; \$\times 460\$, tail 95 mm.

Range. Peculiar to Ceylon. A hill species; only known from a few specimens.

Nothing appears to be known about its habits.

Genus PSEUDOXENODON.

Pseudoxenodon Boulenger, 1890, F. B. I. p. 340, and Cat. Sn. Brit. Mus. i, 1893, p. 270 (type macrops); Pope, Rept. China, 1935, p. 139; Bourret, Serp. Indochine, 1936, p. 111.

Maxillary teeth 20 to 28, increasing slightly in size posteriorly, the last two abruptly and much enlarged, and separated from the others by a slight interval, as in Natrix subminiata (fig. 95 c). Head distinct from neck; eye large, with round pupil. Body cylindrical; scales on the anterior part of the body disposed obliquely, keeled, without apical pits, in 19 or 17 rows; ventrals rounded; tail moderate; subcaudals paired.

Range. China; Indo-China; the Malay Peninsula; Java. Eight species are known, the most widely distributed one being macrops. Three occur in the area covered by this work.

Key to the Species.

V. 151-180; C. 55-80; body without cross-bars. macrops, p. 311. V. 131-142; C. 42-52; above with 15-24 con-

spicuous broad black cross-bars hambusicola, p. 313.

V. 135; C. 53; above with 33 small oblong red bars. popei, p. 314.

227. Pseudoxenodon macrops.

Tropidonotus macrops Blyth, 1854, J. A. S. Bengal, xxiii, p. 296 (Darjeeling; Calcutta); Stoliczka, J. A. S. Bengal, xl, 1871, p. 436,—Pseudoxenodon macrops, Boulenger, F. B. I. 1890, p. 340, and Cat. Sn. Brit. Mus. i, 1893, p. 270; Venning,

312

J Rombav V H 8 xx, 1910-1911 pp 340 and 772 Well, bd xv 1903 p 3*1 and xvt 1509 pp 31 and 772 Kell, Smedley Bull Raffres Has no B 1931 pp 36 Tope Roya China, 1935 p 135 fm th Ree Inde Market 1940 pp 484 Topeshoosev skitninger America 1931 J A. 8 Bengal xi,

P of tearproage Caronias)

Tropodocota augmentorpo Bipth (an part) 1854 J A.5 Beneal

Trop 253 (Barreling and Calcutta) Schater J A.

D superbay N B 5 and 1922 p 808 Bo arrel Sept Seed
token 1839 p 111 Shaw & others J Darpeling 112

v 1832 p 151

Pseudozenodon angustoepa uniformia Bourret 1935 Rall Instr Pob Hano Apri p 263 (Tam dao an I Chapa, Tong Kms

larus) ant very intsch ne, 1936 p 116

Wax flars teeth 95 to 27 nostril large between two nassis sut re between the internasala half or a little more than half that latween the prefrontals loreal large a little longer than high I preocular not touching the frontal 3 postoculars 8 s praist als 4th and 5th touching the eye 7th highest temporals 2+2 genials well developed the anterior a little shorter than the posterior Scales in 19 19 or 17 15 rows, feebly or strongly keeled \ 151-180 C 55-80 A 2 In the sexually mature male the keels on the schiadic region develop atrong t thereles

Remipens extending to the 7th caudal plate forked at the 4th dutal to the fork it is spinose except for a small area at the extreme to which is callyculate the spines are fire but long proximal to the fork it is almost smooth. the sulcus I po ate formed by two deep folds and two more

run parallel with them

Brown sh olivaceous or greyish above with or without a vertebral a res of tellowish reddish brown or orange dark edaed spots or hort cross bars often placed obliquely and a dorso lateral seres of black apota a more or less distinct chevron slaped mark on the nape pointing forwards present sellows h below the anterior part of the belly or abunt with large | adrangular black or dark brown spots sometimes united to form cross bars posterior part of belly and tail speckled or clouded with black or dark grev

The dorsal markings are subject to considerable carration Wall (1909) Living an account of a large number of specimens all from the neighbourhood of Darjeeling writes - The ornamentation of the species is very varied and in some specimens extremely beautiful In a young example the head was slat; blue behind this the nape bore a broad intensely black arrow head bordered behind with a narrower band of einnamen In some spec mens the head is a rich dark green m some the arrow head is billiard cloth green in others like and in others is completely absent. In some the back is nearly uniformly olivaceous-green or brown In some the series of dark costal spots is but obscure, in others very black or purplish. In some no trace of light cross-bars can be seen, in others they are more or less distinctly visible, in others very conspicuous, sometimes whitish, sometimes cinnamon, or the anterior whitish and the posterior cinnamon, Some specimens are chequered with green, black, amber and ochre spots. With all this variety of form, the specimens do not lend themselves to a grouping into colour varieties, for scarcely two specimens are quite alike.

Total length: 3 1160, tail 230; 2 1020, tail 200 mm.

Range. The Eastern Himalayas as far west as Nepal; Assam; the whole of Burma as far north as lat. 28° and south to Tenasserim (Taok plateau); Siam (Pa Meang in the extreme north); Annam (Langbian plateau); Malay Peninsula (Cameron Highlands).

Common in the neighbourhood of Darjeeling up to 5,000 and Rare in Indo-China south of lat. 20°. When

excited it can flatten the neck in a marked degree.

Pseudoxenodon macrops sinensis (type locality Yunnan-Fn) differs from the typical form in having fewer ventrals (138-162), fewer subcaudals (57-68), and in having usually only 7 supralahinls.

Wall's contention that the proper name of this snake is anyusticeps because that name has page preference over macrops is not a correct interpretation of the Rules of Nomenclature. If names are of the same date, that selected by the first reviser shall stand (Art. 28); the first reviser in this case was undoubtedly Schater (1891). See also H. W.

Parker, P. Z. S. 1935, p. 524.

More material is needed before we can satisfactorily determine the status of the various members of this difficult genus. Pope, whose revision of it (1935) is the most complete yet attempted, includes six species. The differences between them are based largely upon coloration and this, as shown in macrops, can be most variable. The single specimen which I saw in Paris, collected by Bourret in Tong-King, and identified by him as P. dórsalis, is certainly not that species. I provisionally refer it to bambusicola Vogt; it has a scale formula of 19:17:15. V. 143; C. 51.

228. Pseudoxenndon bambusicola.

Pseudoxenodon bambusicola Vogt, 1922, Arch. Natur. Berlin, Ixxxviii, A, 10, p. 138 (Mountains of N. Kwangtung); Pope, Rept. China, 1935, p. 140, fig.
Pseudoxenodon melli Vogt. I. c. s. p. 139 (Lungtow, N. Kwantung);

Smith, J. Nat. Hist. Soc. Siam, vi, 1923, p. 202.

I obtained a single specimen of this snake in Hainan; elsewhere it is known from China.

229 Pseudoxenoden popel

Pseudozenodon popes Gresnit, 1936 Proc Biol Soc Washington, xl p 119 (Los Mother Mountain, Haman), and Peking Nat Hist Bull xv 1941 p 186, 6g head

known only from the type

Genus MACROPISTHODON.

Macropisthodon Boulenger 1893, Cat Sn Brit Mus 1, p 285 (type flaviceps) and Rept Malay Pen 1912, p 128; De Rooij Rept In lo Austral Arch is 1917, p 91, Pope, Rept China 1933 p 161

Pseudopkistrodon Van Denburgh, 1909, Proc Cal Acad Sci hi. p 51 (type correspon)

Tropidonofus (in part) Boulenger, 1899, P B I p 341

Maxillary teeth 11 to 18 followed by two very large backward pointing fangs, separated from the others by a short interval Head distinct from neck, eye moderate, pupil round Body rather stout, scales strongly keeled, in 19 to 27 rows with apical pita, ventrals rounded, tail rather short, subcaudals paired Hypapophyses developed through out the vertebral column

Range The Malayan Region , India , Yunnan, China

The genus contains four species, two in the Malayan region, one in the Chinese and one in India. As already stated (p 282) it is closely allied to the Rhabdophis group of Nature, from which it may have been derived. In Macropisthodon it would appear almost as if the development of the posterior fangs had passed the stage when they were really serviceable to their owner They extend backwards almost m a straight hne with the long axis of the maxillary bone, and it is only by extreme elevation of that bone that they can be brought into service All the members of the genus have the habit of dattening the neck and fore part of the body and of adopting an erect cobra like attitude

230 Macropisthodon plumbicolor,

GREEN KEETBACK

Tropudonoise plumberde Canton, 133, P. Z. S. p. 54 (1976) by Maken, (Saugery) C.1. drawing in Bodiesan Lib Dyziden Control, 133, P. Z. S. p. 54 (1976) by Maken, (Saugery) C.1. drawing in Bodiesan Lib Dyziden Control, 135 (1976) by Maken Control, 13

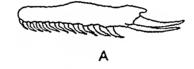
Trigonocephalus ellioti Jerdon, 1853 J Asiat Soc Bengal xxii P 523 (type los Nikari Hills)

Xenodon viridis Dum. & Bib. 1854, Erp. Gen. vii, p. 763 (Indes

Orientales; Paris).

Amphiesma brachyurum Jan, 1865, Arch. Zool. Anat. Phys. iii. 37, and Icon. Gen. Ophid. 1868. Liv. 29, pl. iii. fig. 2 (Sultanpur).

Maxillary teeth 11 or 12+2. Head rather broad and short: nostril between two nasals; internasal as long, or nearly as long, as the prefrontals; loreal often united with the lower preocular; 2 pre- and 3 or 4 postoculars; temporals 2+3: 7 supralabials, 3rd and 4th touching the eye; anterior genials shorter than the posterior. Scales strongly keeled, except the outermost row, in 23 or 25:25 or 27:17 or 19 rows; V. 144-162; C. 3 39-48, 9 34-43 (for specimens from India). In 21 or 23:21 or 23:17 rows. V. 154-153; C. 3 40-45, 9 37-47 (for specimens from Ceylon); A. usually divided. The scales



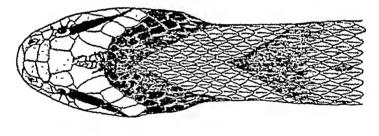


Fig. 99 .- Macropisthodon plumbicolor. A. Maxilla (B.M. 1930.5.8.266). B. Dorsal view of head and neck.

of the neck are variable in character; they may or may not indicate the presence of the gland below. In some individuals they are unaltered; in others a few scales are enlarged and paired, or there may be a vertebral series of very small scales.

Hemipenis extending to the 15th caudal plate, forked opposite the 9th. It is strongly plicate and spinose throughout, the spines gradually diminishing in size as they approach the tip. The vertebral gland is of the sacculated type and extends the whole length of the body. A full description of it is given in P. Z. S. 1938, I. c. s.

Grass-green above in life, becoming dull olive-brown (plumbicolor) in spirits. Juveniles have a large A-shaped mark on the neck its apex forwards, reaching to the frontal shield and a second much smaller one behind, the intervening space being bright yellow or orange, a black stripe from the eve to the angle of the mouth and more or less regular transverse black spots or cross bars on the back and tail, belly whitish vellow or plumbeous rarely with darkish spots With age the black markings entirely disappear

Total length ; 485 tail 70 (750, Wall) . 2 690, tail 85 (940 Wall) mm

Range The whole of India except the Ganges Valley and

the extreme north west Cexlon

Rare in the plains common in many hill districts, ascending to 7000 feet found usually among low vegetation or in grass it has been known to enter houses. In disposition, it is singularly gentle and inoffensive, when alarmed, it erects the fore body and flattens the neck like a cobra Some specimens are very timid and flatten the whole body on the ground (Wall) Its chief food is toads

Genus PARARHABDOPHIS

Parari abdoph a Bourres 1934 Bull Gen., Instr Pub Hanos March p 131 and Serp Indochine 1938 p 120 (type chapters)

Maxillars teeth 32 followed without any interval by three much larger ones Head distinct from neck , eye moderate, with vertically elliptic pipit nostrils lateral, between two nasals Body cylindreal scales in 17 rows throughout, without apical pits subcaudals paired Hypapophyses strongly developed in the posterior dorsal vertebrae

The type specimen one inally preserved in formalin, is now in a very had state of preservation. The pupils, however, are undoubtedly vertical but for this character I should have placed it in the genus Valrix

231 Pararhabdophis chapaensis

Pararhabdophie chaparasis Bourset | c s (Chapa, Tong King,

Internasala nearly as long as the prefrontals, loreal longer than high 2 pre and 2 postoculars, temporals 1+1, 9 supralabials 4th 5th and 6th touching the eye, genuls well developed, the anterior a little shorter than the posterior beales feebly keeled \ 177, C 73 tail incomplete

Hemipenis extending to the 6th caudal plate, not forked. spinose and calyculate throughout

Dark brown above the scales of row 5 on each side with light centres forming two light dorso-lateral stripes,

brownish below, the outer margins of the ventrals lighter; lips whitish, the labials edged with brown.

Total length: 790, tail 160 mm.

Known only from the type-specimen.

Genus XENOCHROPHIS.

Xenochrophis Günther, 1864, Rept. Brit. Ind. p. 273 [type cerasogaster); Boulenger, F. B. I. 1890, p. 353, fig., and Cat. Sn. Brit. Mus. i, 1893, p. 191,

Maxillary teeth rather long, 20 to 25, subequal. Head fairly distinct from neck with angular canthus rostralis; eye moderate, with round pupil; nostril in a single nasal, directed upwards and outwards. Body cylindrical; scales in 19 rows, strongly keeled; without apical pits, ventrals rounded: tail moderate, subcaudals paired. Hypapophyses developed throughout the vertebral column.

A single species.

Range. As in the species.

232. Xenochrophis cerasogaster.

Psammophis cerasogaster Cantor, 1839, P. Z. S. p. 52 (near Calcutta; col. sketch in Bodleian Lib.).—Xenochrophis cerasogaster, Günther, Rept. Brit. Ind. 1864, p. 274; Boulenger, F. B. I. 1890, p. 353, and Cat. Sn. Brit. Mus. i, 1893, p. 191; Wall, J. Bombay, N. H. S. xviii, 1907, p. 104, and xxix, 1923, p. 600.

Amphiesma schistaceum Jan, 1865, Arch. Zool. Anat. Phys. iii. p. 236 (Indes Orientales).

Head narrow, elongate; rostral large, plate-like, about as broad as high; internasals narrowed anteriorly, nearly as long as the prefrontals; frontal long and narrow, constricted in the middle, where it is about as broad as the supraoculars. much longer than its distance from the end of the snout: loreal longer than high; I pre- and 2 or 3 postoculars: temporals 2+2 or 2+3; 9 supralabials, 4th touching the eye, 5th excluded by a subocular; genials elongate, the posterior pair the longest. Scales in 19:19:17 rows, the tips more or less distinctly bidentate. V. 140-154; C. 63-76; A. 2.

Hemipenis extending to the 12th caudal plate, forked near the tip; it is calyculate and spinose throughout, the cups being short and uniform in size; the spines project from the

bases of the cups.

Olive brown to green above, with or without more or less distinct darker spots; lower parts reddish, dappled with brown or purplish black, with small whitish spots, particularly on the fore-part of the body; a bright yellow line, white in the young, along the outer margins of the ventrals, bordered above with chocolate and below, in life, with red, hips yellow edged with chocolate above, these two colours con innous with those upon the flanks

Total length 3 510 tail 120 9 620, tail 140 mm.

Range UP (Fyzahad) Bengal, Assam (Khasi Hills.

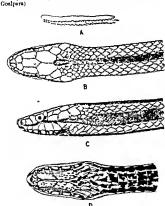


Fig. 100 -- Vertochrophia cerasoguster A Maxilla. B C D Dorsal lateral and ventral views of head. (B.M. 1907.2 14 2 10)

This strikingly handsome make is almost entirely aquation in its habits. Of ris food, Wall (1907) writes I found many instruction and the striking of the stri

Genus ATRETIUM.

Tropidophis (non Coct. & Bib. 1843), Gray, 1849, Cat. Spec. Sn. Brit. Mus. p. 69 (type schistosus). Atretium Cope, 1861, Pr. Acad. Nat. Sci. Philad. p. 299 (type schistosum); Günther, Rept. Brit. Ind. 1864, p. 272.

Helicops, Boulenger, 1890, F. B. I. p. 352, and Cat. Sn. Brit. Mus. i, 1893, p. 272 (in part); Pope, Rept. China, 1935, p. 159,

Maxillary teeth 19 to 24, posterior largest; head scarcely distinct from neek; eye rather large with round pupil; nostril valvular, directed more or less upwards, in a divided or semi-divided nasal; a single internasal. Body cylindrical; scales keeled, without apical pits, in 19 rows: ventrals rounded; tail moderate; subcaudals paired. Hypapophyses* developed throughout the vertebral column.

Range. Ceylon; India; Yunnan. Two species.

Key to the Species.

A pair of prefrontals schistosum, p. 319. Three or four profrontals [yunnanensis], p. 320.

233. Atretium schistosum.

OLIVACEOUS KEELBACK.

Russell, 1801. Ind. Serp. ii, p. 5, pl. iv (no locality given).

Coluber schistosus Daudin, 1803, Hist. Nat. Rept. vii, p. 132
(based on Russell's plate).—Atretium schistosum, Günther, Rept.

Brit. Ind. 1864, p. 273.—Helicops schistosus, Boulenger,
F. B. I. 1890, p. 352, and Cat. Sn. Brit. Mus. i, 1893, p. 274;

Wall, J. Bombay N. H. S. xvi, 1905, p. 391, and xviii, 1907,
p. 109, and xxi, 1912, p. 1009, col. pl., map, and xxix, 1923,
p. 608, and Sp. Caylon, 1921, p. 135. p. 608, and Sn. Ceylon, 1921, p. 135.

Tropidonotus moestus Cantor, 1839, P. Z. S. p. 54 (Bengal:

sketch in Bodleian Library).

Tropidonolus surgens Cantor, ibid. p. 54 (Bengal: sketch in Bodleian Library).

Rostral broader than high, visible from above; internasal longer than the suture between the prefrontals; frontal twice as long as broad, much longer than its distance from the end of the snout, not twice as broad as the supraocular: loreal about as long as high; 1 pre- and 2 or 3 postoculars; temporals 2+2; 8 or 9 supralabials, 3rd and 4th, or 4th and 5th, touching the eye; anterior genials shorter than the posterior. Scales in 19:19:17 rows, more or less distinctly

^{*} Absent in the American Helicops carinicauda, type of the genus Helicops, and in most other species of the genus, but present in H. anyulatus and H. polylepis. A reconsideration of the whole genus is indicated, or perhaps the abandonment of the character for that genus as in Chrysopelca. Pending revision, the genus Atretium is here restricted to Asia. See also Pope, l.c.s. and Bogert, Bull. Amer. Mus. Nat. Hist. lxxvii, 1940, p. 36.

keeled the keels strongest on the posterior part of the body and tail V 129 160 C 53-85, A 2

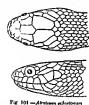
Hemipeous forked at the junction of the distal and proximal 1, spinose and calculate throughout, the calves

proximal 1, spinose and calveulate throughout, the calves are thick walled and present a honeycomb appearance, the spines are small and on the floor of the calves

Olive brown or arcranch above, uniform or with two senses of small black appts about the lack, a more or less distinct dark lateral streak sort-times present, upper lip, outer row feeder and lower surfaces yellow. According to Wall, speciment from Southern Irolas have a reddich line down the body on scale rows 5 and 6

Total length 550, tail 160; Q 800, tail 185 mm

Range Ceylon India (Anaimalais, Wynasd, Mysore, UP, Orissa) Common in Ceylon and at Bangalore (Wall)



TIE TO - VILETIBUL SCITISOUS

of scholouse subshits the plains and plateaus up to 300 feet altitude bits queet and imoffeneave in deposition and digmail in its babits. Although kings a most extreme ment, it is altitude to be subshits and though kings a most extreme seconds to be the subshits. Although kings a most extreme saccords to be the hot put of the body is maked and fish neck fattened, where the subshit is also subshit in the subshit is also subshit in the subshit is a subshit in the subshit is a subshit in the subshit is a subshit in the subshit in the subshit is a subshit in the subshit in the subshit is a subshit in the subshit in the subshit is a subshit in the subshit in the subshit is a subshit in the subshit in the subshit is a subshit in the subshit in the subshit in the subshit in the subshit is subshit in the subshit in the subshit in the subshit is subshit in the subshit in the subshit in the subshit is subshit in the subshit is subshit in the subsh

234 [Atretium yunnanensis]

Atretum schistorum var yusenmenens Anderson, 1879 Anat, Zool Res W Yunnan, p 822 (Muangia & Hotha, W Yunnan, Calcutta)

Heltops ymnanensis, Pope, Rept China, 1935, p 159, fig. head Range Western Yumnan

Genus TRACHISCHIUM.

Trachischium Günther, 1858, Cat. Col. Sn. Brit. Mus. p. 30 (type rugosum); Boulenger, F. B. I. 1890, p. 284, and Cat. Sn. Brit. Mus. i, 1893, p. 297; Wall, J. Bombay N. H. S. xxix, 1923, p. 608.—Trachyischium, Berg, 1901, Comm. Mus. Nac. B. Aires, i, (8) p. 289.

Eminophis Werner, 1924, Sitz. Ber. Acad. Wiss. Wien, (1) exxxiii,

p. 55 (type lineolata).

Maxillary teeth 18 to 20, subequal. Head not distinct from neck; eye moderate, with rounded or vertically subelliptic pupil; nostril between two nasals, directed forwards

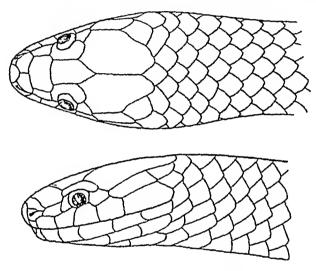


Fig. 102.—Trachischium fuscum. (B.M. 74.4.29.1179.)

and outwards; body cylindrical; scales smooth, keeled in the sacral region, in 13 or 15 rows throughout, without apical pits;

ventrals rounded; tail short, subcaudals paired.

Common characters, unless otherwise stated:—Rostral as broad as high, or a little broader than high; internasals much shorter than the prefrontals; frontal twice or nearly twice as broad as the supraoculars, much shorter than the parietals; loreal twice as long as high; 1 preocular: 1 long anterior temporal; 6 supralabials, 1st smallest, 6th largest, 3rd and 4th touching the eye; 4 infralabials in contact with the anterior genials; anal undivided; hypapophyses developed throughout the vertebral column.

Hemipenis short, undivided, and spinous throughout, the spines being of almost uniform size and arranged in regular,

longitudinal series.

Range. The Himalayas; Assam.

322

Diminutive enakes of gentle disposition, hving generally under stones or fallen trees, and feeding upon worms, they lay from 3 to 6 eggs at a time

Key to the Species

I Scales in 15 rows Two prefrontals

· · · · · · · · monsecola, p 32%. II Scales in 13 rows

Prefrontal single rarely divided; I postocular; V 150-181 belly dark brown Prefrontal single rarely divided; I postocular; fuerum, p 322

greathers, o 123 Two prefrontals 2 postoculars, 6 supralabials. Two prefrontals I postorular , S supraiablels .

tenureps, p 325. Inve, p 324.

235 Trachischium morticola

Calamaria manurold Cantor, 1839, P Z B P 80 (Nage Hills. London , steech m Bodlena Library) - Trachischism montroid Loundon, atetch ni Bodiesan Library) — Tractacelism memoratics. Bodiesger, P. B. I. 1800 p. 288, and Gat. Fn. Brit 1801 p. 288, and Gat. Fn. Brit 1802 p. 209 and into hi, 1802 p. 512; Wall. st. J. Honber, 181 S. Nyi, 1807 p. 322, and xx, 1802, p. 121, p. 43. Annandalo Reo Ind Mos 1912, p. 43. P. 288 p. 231 (Darpenng).

Cyclophia reducenter Jerdon, 1870, Fr A. S Bengal, p 80 (Khasi London)

Hills, Assem: type lost) Two prefrontals, two postoculars, rarely morted; tem porals 1+1, antenor genials a little longer than the posterior coles in 15 rows, those of the sacral region quite smooth

V 113-125 C 26-40 Light or dark brown above, with blackish longitudinal lines. and two more or less distinct reddish or light dorso-lateral stripes, yellowish below, a yellow spot on either side of the

neck present or absent Total length 225, tail 25 mm.

Range Assam (Hills north and south of the Bramaputra); Bengal (Barakar) Common in the hills of Assam

236 Trachischlum fuscum.

Colomora Jusco Hight, 1824, J. A. B. Bengal, xxist, p. 283 (Dx Peling type lext)—Trachteckum Jussem, Günther, P. L. S. 1860, p. 161, Bondenson, F. H. I. 1890, p. 285, and Cat. Ear. Brit. Mos. 1, 1893, p. 287, Amazokalison, J. A. B. Bengal, 1904, p. 268, W. Almanokalison, J. A. B. Bengal, 1904, p. 268, W. M. Britter, J. Baryeshne, N. H. S. xxiii. 1923, p. 603, Glaw & actions, J. Daryeshne, N. H. S. xxiii. 1923, p. 163, Glaw & actions, J. Daryeshne, N. H. S. xxiii. 1923, p. 163, Glaw & actions, J. Daryeshne, N. H. S. xxiii. 1923, p. 163, Glaw & actions, J. Daryeshne, N. H. S. xxiii. 1923, p. 163, Glaw & actions, J. Daryeshne, N. H. S. xxiii. 1923, p. 163, Glaw & actions, J. Daryeshne, N. H. S. xxiii. 1923, p. 163, Glaw & actions, J. Daryeshne, N. H. S. xxiii. 1923, p. 163, Glaw & actions, J. Daryeshne, N. H. S. xxiii. 1923, p. 163, Glaw & actions, J. Daryeshne, N. H. S. xxiii. 1923, p. 163, Glaw & actions, J. Daryeshne, N. H. S. xxiii. 1923, p. 163, Glaw & actions, J. Daryeshne, J. Daryeshne, N. H. S. xxiii. 1923, p. 163, Glaw & actions, J. Daryeshne, J. Daryeshne, M. S. xxiii. 1923, p. 163, Glaw & actions, J. Daryeshne, J. Daryeshne, M. S. xxiii. 1923, p. 163, Glaw & actions, J. Daryeshne, J. Daryeshne, M. S. xxiii. 1923, p. 163, Glaw & actions, J. Daryeshne, J. Daryeshne, M. S. xxiii. 1923, p. 163, Glaw & actions, J. Xxiii. 1924, p. 183, p. 183 1939, p 153

Colemaria obscurp streate Blyth, 1854, J.A.S Bengel, Finis p 288 ("Rangoon type lost)
Trochischum rugerum Ganther, 1858, Cat Col Sn Brit Mus

p 30 (Sikkin, London)
Ablobus frigiticus Annuadala, 1905, J. & Pr. A. B. Bengel, I.
p 210 (Gilgit Kashmir Calcutta), Wall Rec Ind. Mus 1919, p 147

Eminophis lincolata Werner, 1924, Sitz. Ber. Akad. Wiss. Wien, Abt. i, cxxxiii, 1924, p. 55 (type loe. unknown: Vienna); Smith, Ann. Mag. Nat. Hist., (10) i, 1928, p. 496 (=fuscum).

A single prefrontal, rarely divided; 1 postocular; temporals 1+2; anterior genials twice, or nearly twice, as long as the posterior. Scales in 13 rows, those on the sides of the posterior part of the body and base of the tail distinctly keeled in the male, feebly keeled or smooth in the female. V. 150-165; C. 28-42.

Dark brown or blackish above and below, more or less iridescent, and with or without indistinct light longitudinal streaks above; the young are light brown above with dark

longitudinal lines.

Total length: 3 325, tail 53; \$480, tail 65 mm. (700 mm.

Wall).

Range. The Himalayas from Gilgit, Loharganj and Garwhal districts in the west to Darjeeling district and Assam in the east.

Very common, according to Wall, in the neighbourhood of Darjeeling at between 5,000 and 7,000 feet.

237. Trachischium guentheri.

Trachischium quentheri Boulenger, 1890, F. B. I.p. 285 (Darjeeling; London), and Cat. Sn. Brit. Mus. i, 1893, p. 298, pl. xix, fig. 1; Wall, J. Bombay N. H. S. xix, 1909, p. 343, and xxix, 1923, p. 609; Shaw & others, J. Darjeeling N. H. S. xiii, 1939, p. 154.

Like fuscum in head scalation; scales in 13 rows, strongly keeled in the male on either side of the vent. V. 132-154; C. 30-43.

Dark brown or reddish brown above, uniform or with indistinct lighter and darker longitudinal streaks; yellowish below (coral red in life), uniform or scantily mottled with brown. Young with an indistinct yellowish collar.

Total length: 3 308, tail 46; 2 420, tail 58 mm.

Range. Sikkim; Bengal (Darjeeling district).

Common in the neighbourhood of Darjeeling at between 3,000 and 7,000 feet.

238. Trachischium tenuiceps.

Calamaria tenuiceps Blyth, 1854, J. A. S. Bengal, xxiii, p. 288 (Darjeeling; Calcutta).—Trachischium tenuiceps, Boulenger, F. B. I. 1890, p. 286, and Cat. Sn. Brit. Mus. i, 1893, p. 299; Wall, J. Bombay N. H. S. xix, 1909, p. 343, and xxix, 1923, p. 609; Shaw & others, J. Darjeeling N. H. S. xiii, 1939, p. 154.

Two prefrontals; two postoculars; temporals 1+1 or 1+2; anterior genials not twice as long as the posterior; scales in 13 rows, keeled in the male on the sides of the vent. V. 125-140: C. 28-42,

The young are light brown above the scales with dark edges forms, lengthdural lines. Adults are dark brown to blackth above vellow below (bright, yellow or orange in hie), tail mottled below with I rown and with a brown messal line. Total length 370 tail 80 mm (2)

Range Nepal Silkim, Bengal (Darreeling district, Hills

near Barakar)

239 Trachischium in ve

Trachischium Lere Persona, 1904 Rev Suime Zool, Gerecca, zil, p. 66. (Index Orientales Geneva) Trachischium (Orientales University) T. Roembay N. H. S.

Trucksectium quanquelabadas Walt, 1911 J. Bombay N. H. S. xxi, p. 901 (Maktour 2500 feet W. Himalayan London ro type from Na ni Tal dut. Calcutta) and xxix, 1923, p. 609

Two prefrontals I postocular, temporals 1+2.0 supralability the last very long antenor genuals not twice as long as the posterior scales in 13 rows strongly heeled in the male on either side of the vent V 141-147, C 29-39

Olive above vellowish below, posterior half of belly and

tail uniform or mottled with grev

Total length & 305 tail 50, 9 450, tail 60 mm.
Range Western Himalayas (Mukteear and near Nami Tal)

Genus PLAGIOPHOLIS

Playophole Boulerace 1893 Cat Rn. Bert Man. L. p. 201 (type laceopy). Wall, J. Bombey N. H. S. XXXX. 1923, p. 610 (type Trainophole Boulerace 1893) Cat. Sn. Bert Man 1. Add (type Inchalate). 14st, J. Bombey N. H. S. XXXX, 1923, p. 612. Pope Rept Chm. 1923, p. 173.

Maxillary tecth 16 to 20, small equal, head not dature from back, nostril between two massle, or between them and the first laint, eye moderate with vertically sub-dimenporal loreal present or absent, body short stouths, cylindrical scale smooth more or less oblique without pixin 15 rows throughout, ventrals rounded, tail short, subcardials angle or parted. Hypapophyse developed throughout the vertebral column. In all the speces the mental is in contact with the anterior genal.

Range Burma Tong King , S China.

Four species are known , three are included in this volume,

the fourth, P styrm, mhabiting China-

In having themely oblique dorsal scales and no lorsal scales and signar connect Playopholis with Trithampholis and I have no heatation in muring the two genera. The harseter of the nostil is variable. The peculiar hemipian of blahroom is foreshadowed in that of suchdis

The little that is known of these makes shows that they

are oviparous and feed chiefly upon worms.

Key to the Species.

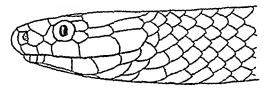
I, No loreal.	
	blakewayi, p. 325.
Scales distinctly oblique; 6 supralabials, 3rd and 4th touching the cye; T. 1+2	delacouri, p. 326.
II. A loreal. Scales distinctly oblique; 6 supralabials, 3rd and 4th touching the eye; T. I+2	nuchalis, p. 326.

240. Plagiopholis blakewayi.

Plagiopholis blakewayi Boulenger, 1893, Cat. Sn. Brit. Mus. i, p. 301, pl. 19 (Toungyi, Shan States; London); Wall, J. Bombay, N. H. S. xxix, 1923, pp. 467, 610, and xxx, 1925, pr. 810.

Trinhinopholis nuchalis, Wall, 1921, J. Bombay N. H. S. xxviii, p. 43

Rostral broader than high, well visible from above; internasals broader than long, shorter than the prefrontals; frontal much longer than its distance from the end of the



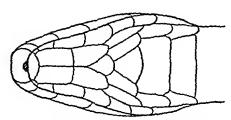


Fig. 103.—Plagiopholis blakewayi. (B.M. 1925.5.25.11.)

snout, as long, or nearly as long, as the parietals; no loreal (Wall records it in one specimen), its position taken by the outer end of the prefrontal, which is wedged in between the posterior nasal and the preocular: 1 preand 2 postoculars; temporals 1+1 or the 2 united in one long shield; 5 supralabials, 1st and 2nd smallest, 3rd touching the eye, 4th usually the largest; 3 infralabials touching the anterior genials, which are a little longer

than the posterior Scales scarcely oblique, those of the sacral region feebly keeled in the male V. 124-132; C & 23-31, 9 21 paired or some of them single . A. I.

The hemipens is not forked, but the sulcus bifurcates

near the base of the organ, distal to the fork the organ is spinose, except at the up, where it is calyculate

Dark brownish or reddish above, some of the scales edged with black, and with two dorso-lateral, more or less distinct, series of small black spots, greyish or pinkish on the aides, yellowish (or pink in life) below, uniform or speckled with brown, or with the ventrals edged with brown; a black chevron on the neck present or absent; lips yellowish, the scales edged with black.

Total length 380, tail 37 mm (9). Range Burma (Kachin Hills , Southern bhan States)

241 Plagiopholis delacquri

Plogropholus delacousi Angel, 1929, Bull Mus Hat Nat Pares, (2) t P 77 (Cheng kuang Upper Lace; Pars), Bourret, Serp Indochune, 1936, p. 136 Trerkinopholus nuchales, Smith, Ann Blag Nat Hut (10) vi.

1930 p 481 Trishmopholos stymu (non Houlenger), Bourret 1936 Serp Indochuse p 145, and Bull Gen Instruct, Pub Hanol, Feb 1939 p 20

Differs from blakeways as follows -Temporals 1+2, 6 supralabials, 3rd and 4th touching the eye, 5th and 6th largest Scales distinctly oblique V. 108-129, O. 20-25, paired I ellowish or greyish brown above , a series of round, black,

dorso leteral spots connected to each other by light transverse bars or chevrons a large black chevron pointing forwards on the nape, edged in front and behind with lighter, lower parts yellowish heavily spotted with dark brown, his with black vertical bars

Total length 395, tail 45 mm (2) Range Upper Laos (Chieng kuang), Tong King (Chapa

and Fan Si Pan Mts) A rare species

242 Plagiopholis nuchalis

Trickinopholis muchalis Bontenger 18'13, Cat En Brit Mus b. p 419 pl xxxvn fg 1 (Toungy, 8 Shan States, London) and Ann. Mus Civ Genova. (2) xui, 1893 p 323, Smith, J Nat Hut Soc Siam : 1915 p 155 and J Fombay N H S xnn, 1915 p 785, Wall, J Bombay N H S xnx, 1925 PP 487, 812, and xxx, 1925, p 811, and xxx, 1926, p 561. Taylor, Pr. Acad. Nat. Sci. Philad. lxxvi, 1934, p. 302.—
Plagiopholis nuchalis, Smith, Rec. Ind. Mus. xlii, 1940, p. 484.
Oligodon evansi Wall, 1913, J. Bombay N. H. S. xxii, p. 514, fig.
(Toungyi, S. Shan States; Bombay), and ibid. xxvii, 1920, p. 175 (=T. nuchalis).

Differs from blakewayi as follows:—A squarish loreal; temporals 1+2; 6 supralabials, 3rd and 4th touching the eye, 5th largest. Scales distinctly oblique, those of the sacral region feebly keeled in the male. V. 122-142; C. 23-80,

paired or some of the anterior shields entire; A. 1.

The hemipenis is forked for about half its length, but the bifurcation of the sulcus commences considerably further back; it is spinose throughout, except near the bifurcation of the sulcus, where there are longitudinal folds; at the extreme tip of the organ the spines are very small; they gradually increase in size as they approach the proximal area.

Blackish brown or reddish above, many of the scales edged with black; a dorso-lateral series of rounded black spots connected with one another by light brown cross-bars, or a dorsal series of obliquely placed, light brown, black-edged cross-bars or elongated spots; sometimes small white or yellowish spots forming a network; a broad black chevron on the neck, pointing forwards, with or without a pale edging; belly yellowish, more or less thickly speckled with black, and usually with large squarish black spots on either side; rarely the black spots are absent.

Total length: 450, tail 55 mm. (3).

Range. Burma (Mahtum and Dinghputyang, north of the Triangle; Katha district, Kachin Hills, Mogok, Shan States, Youngoo district, Karen Hills); Siam north of lat. 13° (Chiengmai, Doi Ang-ka; Khun Tan; Sai Yoke district on the Burma-Siam border, north-west of Ratburi).

Wall records it from Burma at between 3,000 and 4,000 feet altitude; in Siam my specimens were obtained at 2,000 feet.

Genus RHABDOPS.

Grotea (not of Cresson, 1846) Theobald, 1868, Cat. Rept. As. Soc. Mus. p. 45 (type bicolor).

Hhabdops Boulenger, 1893, Cat. Sn. Brit. Mus. i, p. 300 (type olivaccus); Wall, J. Bombay N. H. S. xxix, 1923, p. 610.

Pseudocyclophis Boulenger, F. B. I. 1890, p. 299 (in part).

Maxilla rather short, with 10 to 12 small, subequal teeth. Head not distinct from neek; eye moderate or small, with rounded or vertically subelliptic pupil; nostril crescentic, in the nasal, or connected by suture with the first labial. Body cylindrical, elongate; scales smooth, without apical pits, in 17 rows throughout; ventrals rounded; tail moderate;

subcaudals paired. Hyperpophyses present throughout the vertebral column

Rosge Southern India Burma; Yunnan, Two species.

Key to the Speeces

Two intermedals two prefrontals planeress, p. 324. One internetal one prefrontal bicolor, p. 328

243 Rhabdops obvareus

Atlates chrocens Boldome, Intl Madres Quert J Med. Scr. Ye P ! Clanantoddy Halaber Batrict, London) - Pandocyclophic oftrorens Bentroper, F B I 1890 p 200 - Platters corners Boulenger Cat ba Brit Mas I, 1893, p 200, Wall, I Bombay V H a xxxx 1919, p 564, and xxx, 1923, p. 610.

Head depressed rostral large, much broader than high, well rigible from above enture between the internacion shorter than that between the prefrontals; frontal large, nearly as broad as long, 3 to 4 times as broad as the superoculars longer than its distance from the end of the most, shorter than the panetals, loreal longer than high; 2 preand 2 portoculars temporals 1+1, long, narrow, 5 supralabisla, 3rd touching the eye, 5th very long; posterior grounds shorter than the antenor, usually separated from one another

by scales 1 206-215, C 62-74, A 2 Hemiprins undivided, spinose throughout, distally the spiner are minute becoming gradually larger, and at the base of the on an are arranged in longitudinal series, parallel to

the salms are two prominent folds.

Olivaceous or relicant brown above and below, with & lorgitudial series of small black spots, 2 dorso-lateral and 2 lateral regitrals industrictly edged with dark brown.

Total length 780, tail 120 mm (5)

Range Western Chats (Wansad)

244 Rhapdops breefer.

Calemans broker Blyth, 1884 J.A.S. Bengal ann p. 289 (Assam) Ablatesburder Country Rept Brit Ind 1864, p. 26 toderson, Zool, Res W Yuman 1879 p. 179 ... Grove beater Through Cal Rept Austral See His 1859 p. 879 — Grooth Breath Freedom Cal Rept Austr See His 1859 p. 350 — Freedom Gridopie Scotler Boulenger, P. B. 1859 p. 350 — Flatford March, Studienger Cat for Bru Mar. 1923 p. 301, Wal, J. Burdbay A. H. S., and Ext. 1922 p. 353, p. 350, p. and ECK (925 p 810 and ECK 1926 p 561 Pope, Rept Chma, 1935, p 176

Snout broadly rounded nostrals directed slightly upwards. metral large, much broader than high, well visible from above internavals muted into a angle shield, scaredy shorter than the prefrontale, which are likewise united, frontal subtriangular in shape, as broad as, or broader than, long, four times as broad as the supraoculars, usually shorter than its distance from the end of the snout, much shorter than the parietals; loreal squarish or a little longer than high; 1 or 2 pre- and 2 or 3 postoculars; temporals 1+1, long and narrow; 5 supralabials, 3rd touching the eye or separated from it by the lower pre- and postoculars, 5th very long; posterior genials as long as the anterior, separated from one another by scales. V. 187-214; C. 63-77; A. 2.

Hemipenis as in olivaceus but without the longitudinal

folds.

Dark brown or black above, yellowish-white below, the two colours strongly contrasted, but the line of demarcation, which

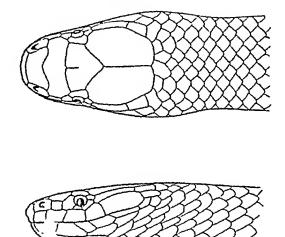


Fig. 104.—Rhabdops bicolor.

is upon scale rows 2 or 3, often very uneven in outline; tail uniform below, or spotted with black. Immature specimens may have the dorsal scales edged with black, forming longitudinal lines; in specimen B.M. 1935.10.12.10 from the Mishmi Hills, the dark colour of the back descends on to the flanks in a series of V-shaped marks.

Total length: & 600, tail 125; 9 675, tail 145 mm.

Variation:—There is considerable irregularity in the scalation of the head; the internasals may be partly united with the prefrontals or the latter with the frontal; one example has an azygous shield between the prefrontals.

Range. Assam (Khasi and Mishmi Hills); Burma (Kachin

Hills): Western Yunnan.

Found in the hills; it feeds on worms and slugs.

Genus OPISTROTROPIS.

Oputhotropus Ginther, 1872 Ann Mag Nat Hist (4) ix, p 16 (type ater); Boulenger, Cat Sn Brit Mus i, 1893, p 283, Popo, Rept China 1935, p 164; Bourret, Serp Indochme,

1936, p 125 Calamohydrus Boulenger, 1889, Ann Mag Nat. Hist (6) v. p 44

(type andersons) Helicoproides Mocquard 1890, Le Naturaliste, p 154 (type typerus)

Trimerodyles Cope, 1835, Pr Acad Nat Sc Phila, p 426 (type balteatur)

Tapinophis Boulenger, 1809, P Z S p 164 (type latouchii) Liparophis Paracca, 1904, Rey, Baisse Zool, xii, p 663 (type

Cantonophia Werner, 1200, Jahrb Nat Wartemb Ixv, p 57 (type prefrontalus)

Paratapunophus Angel, 1929, Bull Mus Hist. Nat Paris, (2) L. P 77 (type premarilloris), Bourret, Berp Indochine, 1936,

Paralelyops Bourret 1934, Bull Instr Pub Gen, Hanoi, May, P 170 (type annamenese)

Maxillary teeth small, 20 to 40 in number, subequal, or the last two slightly enlarged Head not or searcely distinct

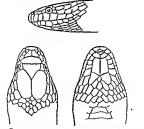


Fig 105 - Opisikotropis spenceri (After Smith)

from neck , eye moderate or small, with rounded or vertically subelliptic pupil, nostril in the nasal, directed upwards and outwards, prefrontal very broad, usually single Body cylindrical, scales smooth or keeled, without apical pits, in from 15-19 rows, ventrals rounded, tail moderate, subcaudals paired. Hypapophyses developed throughout the vertebral column.

Common characters unless otherwise stated:-Head depressed; snout broadly rounded; rostral broader than high, just visible from above; prefrontal at least twice as broad as long, forming a long suture with the frontal, which is two to three times as broad as the supraoculars; anal divided.

Range. Siam and French Indo China north of lat. 18°;

Southern China: Hainan: Borneo; Sumatra.

Eleven species are known.

Key to the Species.

I. Scales in 19 rows.	
V. 196-205; body banded	bulttatus, p. 331.
V. 149; body not banded	premaxillaris, p. 332.
II. Scales in 17 rows.	
10 or 11 supralabials	lateralis, p. 332.
8 supralabials; internasals twice as long as broad, not touching the loreal	
broad, not touching the lereal	andersoni, p. 333.
8 supralabials; internasals broader than long, in contact with the loreal	= 202
TITE Compact with the lorent	spenceri, p 333.
III. Scales in 15 rows.	
Scales smooth; 1 preocular	jacobi, p. 333.
Scales keeled; 2 preoculars	annumensis, p. 334.

245. Opisthotropis balteatus.

Trimerodytes balteatus Cope, 1895, Proc. Acad. Nat. Sci. Philad. xlvi, p. 426, pl. 10 (Hainan: Harvard); Steindachner, Sitz. Bor. Akad. Wiss. Wien, cxv, 1906, 1, p. 905; Schmidt, Bull. Amer. Mus. Nat. Hist. liv, 1927, p. 438; Pope, Rept. China, 1935, p. 167, pl. vii, figs. E-H; Gressitt, Peking Nat. Hist. Bull. xv, 1941, p. 189.
Liparophis bedoti Peracca, 1904, Rev. Suisse Zool. xii, p. 664 (China. Graya)

(China: Goneva).

Opisthotropis multicincta Fan, 1931, Bull. Dept. Biol. Sun Yat Sen Univ. (11), p. 82, fig. (Lo-siang, Kwangsi Prov.).

Internasals about as broad as long; loreal as long as high, not touching the intermisal; I pre- and 2 or 3 postoculars; temporals 1+2; 8 or 9 supralabials, 4th or 5th, or both, touching the eye: anterior genials shorter than the posterior, the latter diverging from one another. Scales in 19:19:17 rows, smooth anteriorly, more or less distinctly keeled posteriorly. V. 194-205; C. 69-99.

Hemipenis extending to the 9th candal plate, spinose, the proximal spines being largest. There are three much enlarged basal spines set in a compact longitudinal row. The lips of the sulcus are spinose and are most conspicuous proximally.

(Pope.)

Olivaceous or greyish above, yellow below, with black annuli which are broader than their interspaces above, and about as broad below, they may be complete or alternate with one snother on the mid-ventral line; each black annulus above is divided transversely in two by a yellow line; head blackish above with vertical yellow markings, one in front of, and one behind, the eye, a third at the angle of the mouth Total length 2 790, tail 145 mm.

Range Haman , Southern Chana : Tong-Kang : Cambodia (fide bleindachner)

O balteatus frequents mountain streams where it may be found under rocks. It is quick in its movements and does not bite when handled

246 Opisthotropis premaxillaria,

Pandopeophia permanilaria Angel, 1029 Buli, Mus Hat Nat Para, (2) t. b. 75, fig. (Cheng Stang, Upper Lace, Vaccile Bourset, Barp Ledochuse, 1936, p. 132, fig.—Opushotopia promanilaria Popo, Rept. Chima, 1926, p. 104

Head feebly distinct from neck; interparals nearly time as long as broad, loreal as high as long, not touching the, internacal, 1 pre. and 2 postoculars; temporals 2+2 9 supraisbials, 4th and 5th touching the eye, 6th prevented by the lower postocular, poeterior genus nearly as long as the anterior Scales in 19 19 17 rows, smooth V 147. 0 63 to 67

Brown above, dirty yellowish below, lips whitish, margined with brown.

Total length 215, tail 50 mm. Known only from the types.

247 Opisthotropis lateralls

Oputhorepus lateralus Roulenger, 1903, Ann. Mag. Nat. Hist. (1) zu p. 353 (Man. son. Mits., Tong King., London)., Pope, Rept. Chma, 1933, p 171, fig

Topmophus shim Mell, 1930, Bitzh Gen Nat Berlin, p 321 (Yao-Shan, Ewangs; Province, China)

Internasals as broad as long, forcal longer than high, not touching the internasal 2 pre and 2 postorulars; temporals 1+2, 10 or 11 supralability, 5th and 6th touching the eye; anterior genials longer than the posterior. Scales in 17 rows throughout, smooth anteriorly, more or less distinctly keeled posteriorly 1.150-173; C 49-56

Hempenia extending to the 8th caudal plate, spinose proximally, with papella fike structures distally, the two areas merging into one another, proximal to the spinose area are two large basel spines (Pope)

Ohre-brown above, with or without dark longitudinal lines

formed by a black edging to the scales; ventrals and outer scale rows yellowish white.

Total length: 2 360, tail 55 mm.

Range. Tong-King (Man-son Mts.); S. China (Kwangsi Province).

248. Opisthotropis andersoni.

Calamohydrus andersoni Boulenger, 1888, Ann. Mag. Nat. Hist. (6) ii, p. 44 (Hong Kong; London).—Opisthotropis andersoni, Boulenger, l. c. s. (6) vii, 1891, p. 343, and Cat. Sn. Brit. Mus. i, 1893, p. 284, pl. 18; Wall, P. Z. S. 1903, p. 87; Pope, Rept. China, 1935, p. 166, fig.

Internasals twice as long as broad; loreal twice as long as high, not touching the internasal; 1 pre-, I post- and 2 sub-oculars; temporals 1+2; 8 supralabials, 4th below the eye; anterior genials much larger than the posterior; scales in 17 rows throughout, feebly keeled. V. 168: C. 58.

Olive-brown above, yellowish below. Total length: 3 245, tail 45 mm. Only known from the type-specimen.

249. Opisthotropis spenceri.

Opisthotropis spenceri Smith, 1918, J. Nat. Hist. Soc. Siam, iii, p. 13 (Muang Ngow, N. Siam; London).

Internasals broader than long, in contact with the loreal, which is longer than high; I pre- and 2 postoculars; temporals 1+2 or 2+2; 8 supralabials, 4th and 5th touching the eye; anterior genials larger than the posterior. Scales in 17 rows throughout, all smooth.

Olivaceous above, yellowish white below, the subcaudals

mottled with grey.

Total length: \$\overline{9}\$ 560, tail 150 mm. The type is 600 mm.

in length but has a good deal of the tail missing.

Range. Known from two specimens, both from the type locality.

250. Opisthotropis jacobi.

Opisthotropis jacobi Angel & Bourret, 1933, Bull. Soc. Zool. France, xviii, p. 129 (Chapa, Tong-King-Yunnan border; Paris); Bourret, Serp. Indochine, 1936, p. 128, fig.

Frontal five times as broad as the supraoculars; internasals nearly twice as long as broad, not touching the loreal; 1 preand 1 postocular; temporals 1+1; 8 or 9 supralabials, 4th and 5th touching the eye; anterior genials nearly twice as large as the posterior; scales in 15 rows throughout, smooth. V. 159-179; C. 69-90.

Shining black above and below, the ventrals and subcaudals with light edges

Total length & 540 tail 145 mm Range Tong Kint (Chapa Tam dao, Agan son)

251 Opisthotropis annamensis

Paraheleops annamenes Bourret 1924, Bull Instr Pub Geo Hano: May p 170 (Bana, near Tourane C Annam; Paris) and Sorp Indoch ne 1936 p 122 fig head

Maxillary teeth 25 the last two slightly larger than the others Head slightly distinct from neck, internasals a little broader than long not touching the loreal, 2 pre and 3 poet oculars, 8 or 8 supralabials, 4th and 5th touching the eye, 6th prevented by the lowest postocular, anterior genials shorter than the posterior Scales in 17 15 15 rows smooth anteriorly, feebly kerled at mid body, atrongly on the posterior

part of the body and tail, 1 169, C 123

Dark brown above with two dorso-lateral series of light, elongated spots very distinct on the anterior part of tha body disappearing towards the posterior part, head dark brown above, with three more or less distinct light lines radi ating from behind the eye, one to the border of the lip, another to the angle of the mouth and a third towards the top of the head light jellowish brown below, the outer margins of the rentrals spotted with brown

Total length 400, tail 160 mm.

Range Known only from the type specimen

Whilst recognizing the characters upon which Bourret has erected his genus Parahelicops, I believe the interests of taxonomy would be best served by extending the definition of Openholrops

Genus ASPIDURA

ROUGH SIDES

Aspadura Wagler 1830 Byst Amphab pp 132, 191 (type Sey brackyorne Boss) Boulenger F H I 1890 p 238 and Cal Bu Hat Mus 1 1893 p 340 Wall, Bn Ceylon 1921, p 203 and J Bombay N H S xxix, 1923 p 411

Maxillary teeth 20 to 24, subequal Head not distinct from neck, nostril between two small masals and the first labial directed forwards and outwards, eye moderate, with round or vertically subelliptic pupil internasal single, no loreal. Body cylindrical , scales smooth, keeled or spinose in the male in the ischiadic region without apical pits, in 15 or 17 rows throughout ventrals rounded, tail short, and candala single or paired Hypapophyses developed throughout the vertebral column.

Common characters, unless otherwise stated:—Rostral small, as high as broad or higher, just visible from above; internasal large, as long as the suture between the prefrontals; frontal

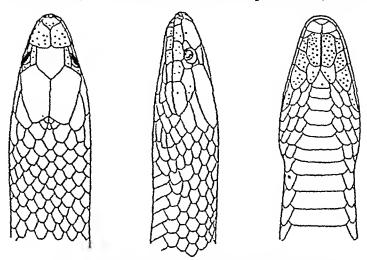


Fig. 106.—Aspidura trachyprocta. (B.M. 94,9.11.11-14.)
Dorsal, lateral and ventral views of head, shewing sensory tubercles.

large, 2 to 3 times as broad as the supraoculars, much shorter than the parietals; temporals 1+2; 6 supralabials, 1st very small, 6th largest, 4th touching the eye; 4 infralabials in

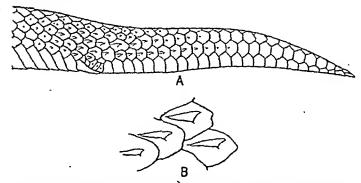


Fig. 107.—Aspidura trachyprocta. (B.M. 94.9.11.11-14.) A. Tail and ischiadic region, shewing spinose tubercles of adult male. B. Four scales magnified.

contact with the anterior genials; 1st ventral in contact with the posterior genials; anal single.

Hemipenis as in Trachischium.

Range Ceylon and the Maldive Islands

Five spaces are known Diminutive, moffensive snakes, living in soil or among fallen leaves, feeding upon worms and insect larve oviparous

Key to the Species

brachworthus p 238

trackyProces, p \$37.

I Beales in 17 rows A. Both postoculars in contact with the

Perretal A preorular, supraorular more than half the

length of the frontal No preocular, supraceular not half the length

of the frontal, snout rounded . copii, p 336 No preocular, suprescular more than half the longth of the frontal, amout pointed . . drammond keys, p 338

B Only the upper postocular in contact with the parectal

A preocular amout pointed guenthers, p. 238 II. Soules in 15 rows A procedur

252 Aspidura brachyorrhus,

Septials brooksparine Bose 1827, Isaa, p. 517 — Asyndure brooksparine, Bollinger, P. B. I. 1850, p. 258, fig., and Cas. So. Brill and J. Boshey, F. III. 1861, G. Geylon, 1912, p. 204, fig. and 25 So. Fr. III. 1861, G. G. Gylon, 1912, p. 204, fig. 304, J. Soylor, F. III. 1861, S. T. 1922, p. 511
Calemana exists S. I. B. X. xxx. 1923, p. 511
Calemana exists S. I. S. Xxx. 1923, p. 511
Calemana exists S. I. S. Xxx. 1923, p. 511
Calemana exists S. I. S. Xxx. 1923, p. 511
Calemana exists S. I. S. Xxx. 1923, p. 511
Calemana exists S. Xxx. 1924, p. 512
Calemana exists

. . ..

Bon a specimens of & brackyorrane, Ceyion, Paris!

Snoot rounded, frontal not twice as long as the supraocolar, I preocular, 2 postoculars, both in contact with the parietal, anterior comals three times as long as the posterior scales in 17 rows, those on either side of the vent feebly keeled in the male V 139-155 : C 27-38, single

Pale yellowish or reddish brown above, with four more or less distinct darker longitudinal streaks and a vertebral series of blacked dots. an oblique blackish stripe on each aide of the rape, belly uniform vellowish, tail more or less abundantly speckled with brown.

Total length Q 360, tail 40 mm.

Bange Ceylon. Found generally in the hills; common in the neighbourhood of Kandy. Prom 2 to 5 eggs are laid at a time

253 Aspidura copil.

Arpdura copis Gunther, 1884, Rept Brit Jad p. 202, pl. xviii.
fig. E. (Ceylon, London). Renderger, F. B. 1884, p. 239
and Cat Sn. Brit Mins. 4, 1892, p. 311, Wall Sn. Ceylon,
1921, p. 203, and J. Bambay N. H. S. xxis, 1922, p. 611

Shout rounded; frontal more than twice as long as the

supraoculars; no preocular; 2 postoculars, both in contact with the parietal; anterior genials twice as long as the posterior; scales in 17 rows, strongly keeled on the posterior part of the body and base of the tail in the male. V. 125-145; C. 20-35, usually all entire.

Brown above with two longitudinal series of large, black, pale-edged spots; a broad, oblique, black stripe on each side of the nape; lower surface yellowish, spotted or speckled

with dark brown.

Total length: 3 415, tail 75; \$ 405, tail 40 mm. (650 mm. Wall).

Range. Ceylon (Hills of the Uva and Central Provinces).

Not uncommon in the Balangoda district at about 4,000 feet.

Wall records a specimen containing 21 eggs, 7 in one ovary,

14 in the other.

254. Aspidura trachyprocta.

Aspidura trachyprocta Cope, 1860, Proc. Acad. Nat. Sci. Philad. p. 75 (Ceylon); Günther, Rept. Brit. Ind. 1864, p. 203, pl. xviii, fig. F; Boulenger, F. B. I. 1890, p. 200, and Cat. Sn. Brit. Mus. i, 1893, p. 313; Laidlaw, Fauna Mald. and Lacc. 1902, p. 121; Fletcher, Spol. Zeylan, v, 1908, p. 98; Wall, Sn. Ceylon, 1921, p. 209, and J. Bombay N. H. S. xxix, 1923, p. 611.

Snout rounded or obtusely pointed; frontal not twice as long as the supraocular; a preocular, sometimes very small or absent; 2 postoculars, both in contact with the parietal; anterior genials 2 to 3 times as long as the posterior; scales in 15 rows, those on either side of the vent and at the base of the tail spinose in the adult male; scales of the chin of the male, particularly the anterior genials, with minute tubercles; scattered tubercles also present upon the shields of the snout. V. 125-150; C. 3 21-26, \$\times\$ 12-18, single.

Light or dark brown, or blackish, above, with longitudinal series of small darker spots and a dark lateral streak, most distinct in the young; lower surface yellowish (yellow or red in life), spotted with black or with large quadrangular black

spots, or entirely black.

Total length: 3390, tail 40; \$540, tail 35 mm.

Range. Ceylon (Hills of the Central and Uva Provinces). Laidlaw records it from the Maldive Islands (Male Atoll).

Exceedingly common in many hill districts in Ceylon at between 4,000 and 6,000 feet; recorded by Wall up to 7,000 feet. He states that the brilliant coloration is seen in both sexes. From 4 to 12 eggs are usually deposited, and breeding appears to go on throughout the year.

YOU. III.

255 Aspidara drummond-hayl,

Appelora drummond Anyi Boulenger, 1904, Spal Zeyl, is, p. 95, pl.—(Balangoda dist., Caylon; London), Wall, Sn. Caylon, 1921 p. 213, and J. Hombey N. R. S. xxxx, 1923, p. 511

Head long and narrow, snort pointed, frontal not twice as long as the supracolar no precolar; 2 posteculars, both in contact with the paretal, antenor genials about twice as long as the posterior, scales in 17 rows, those on either add of the vent keeled in the male V 112-120, C 17-26, all

paired or the anterior ones single
Light brown to dark grey above and below, strongly
indescent, uniform or finely speckled with lighter.

Total length & 195, tail 30 mm

Range Known only from the type locality

256 Aspidura guentheri.

Aspidera quenthers Ferguson, 1878, P. Z. S. p. 819 (Coast of the W. Freymon Ceylon; London); Bouletger, F. D. I. 1893, p. 250, and Cat. So. Brit. Sius. I. 1893, p. 312, Wall, Sn. Ceylon, 1921, p. 208, and J. Bombay N. H. S. mar, 1923, p. 811,

Shout obtasely pointed: frontal not twoce as long as the suppression; I precoular, 2 postoculars, only the upper in contact with the parietal, anterior genulas 3 times as long as the porterior, scales in 17 rows, those on either side of the von charge is the postocular to the contact of the

Light or dark brown above and below, the back with 3 longitudinal series of dark, light-edged dots, a vertebral and 2 lateral, head paler above, a yellow muchal collar, interrupted in the middle and bordered with blackish in front and behind.

Total length Q 170, tail 20 mm

Range Ceylon (Coast of the Western Provinces, Balangoda district)

Genus BLYTHIA

Blythis Thoubald, 1868 Cat Rept Asiat Soc Mus. p 44 https: reinalstal; Boulenger, P B I 1830, p 287, and Cat Sa Brit Mus 4, 1837, p 313, Wall, J Bombay N H S xxix, 1933, p 511

Aproaspulops Annandale, 1912, Rec Ind. Mas vail, p 45 (type antecursorum)

Maxillary teeth 20 to 22, those in the middle a little longer than the others. Head not dustinct from neck, eye moderate, with rounded or vertically sub-elliptin pupil; nostril between two small means, or between them and the first label, directed forwards and outwards, no lored or precedur. Body cylindrical; scales smooth, in 13 rows, without apical pits; ventrals rounded; tail short, subcaudals paired. Hypapophyses developed throughout the vertebral column.

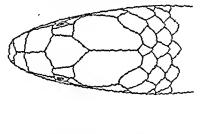
A single species.

257. Blythia reticulata.

Calamaria reticulata Blyth, 1854, J. A. S. Bengol, xxiii, p. 287 (Assam; Calcutta).—Blythia reticulata, Theobald, Cat. Ropt. Mus. Asiat. Soc. 1868, p. 44; Boulenger, F. B. I. 1890, p. 287, fig., and Cat. Sn. Brit. Mus. i, 1893, p. 314, and Rec. Ind. Mus. ix, 1913, p. 338; Annandale, Rec. Ind. Mus. viii, 1912, p. 45; Venning, J. Bombay N. H. S. xx, 1910, p. 336, and 1911, p. 771; Wall, ibid. xviii, 1906, p. 323, and xxix, 1923, p. 611; Smith, Rec. Ind. Mus. xlii, 1940, p. 484.

Aproaspidops antecursorum Annandale, 1912, Rec. Ind. Mus. viii, p. 46, pl. v. fig. 2 (Janak-mukh, Abor Hills; Calcutta).

Rostral as high as broad, visible from above; internasals half, or less than half, the length of the prefrontals: frontal



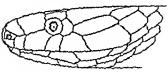


Fig. 108.—Blythia reticulata. (After Boulenger, F. B. I. 1890.)

large, nearly twice as broad as the supraoculars, much shorter than the parietals; I postocular; I long auterior temporal; 6 supralabials, rarely 5, 1st smallest, last largest, 3rd and 4th touching the eye; anterior genials at least twice as long as the posterior; 1st ventral in contact with the posterior genials. V. 127-155; C. 5 26-32, Q 18-24; A. 2.

Hemipenis undivided and spinose throughout, the spines being placed on folds of skin which are longitudinally arranged; at the distal end of the organ, and extending for about } of its

length, are two longitudinal folds.

Olive to blackish above, highly iridescent, the scales sometimes with light specks or borders; young with a white collar interrupted on the vertebral line, disappearing more or less completely in the adult

Total length 3315 tail 40, 2410 tail 45 mm

Rouge Assam (Hills north and south of the Brahmaputra to Manupur) Burma (Hungaan in the Triangle, Sima south of Mritkvina Chin and Lushas Hills)

Oviparous

Genus HAPLOCERCUS

Hopkerrus Gunther 1858, Cat. Col. Sn. Brit. Mins. p. 14 (1798 cryloneurs). Boulenger F. B. I. 1890. p. 230. and Cat. Sn. Brit. Mus. t. 1891. p. 309. Wall, J. Bombay N. H. S. xxx., 1921, p. 610.

Maxillary teeth 10 to 12, large, those anterior a little longer than the others Head not distinct from neck, eye moderate,

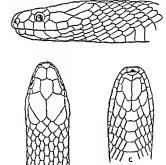


Fig. 109 ~ Haplocereus ceylonenes

with round pupil, nostril between two massls and the first labial, the latter shield being fined with the anterior massl, a single internasal, no loresl, body cylindrical, scaler without apical pits, in 17 rows throughout; ventrals rounded; tail moderate; subcaudals single. Hypapophyses present throughout the vertebral column.

A single species.

258. Haplocercus ceylonensis.

Haplocercus czylonensis Günther, 1858, Cat. Col. Sn. Brit. Mus. p. 15 (Ceylon; London), and Rept. Brit. Ind. 1864, p. 204, pl. xviii, fig. G; Boulenger, F.B. I. 1890, p. 291, and Cat. Sn. Brit. Mus. i, 1893, p. 309; Wall, J. Bombay N. H. S. xxix, 1923, p. 610, and Sn. Ceylon, 1921, p. 143, fig. Aspidura carinata Jan, 1862, Arch. Zool. Anat. Phys. ii, p. 30, and Icon. Gen., Liv. 13, 1865, pl. 1, fig. 5 (Ceylon; Milan).

Rostral small, scarcely visible from above; internasal as long as the suture between the prefrontals; frontal longer than broad, usually shorter than its distance from the end of the snout, about twice as broad as the supraoculars; 1 preocular, pointed in front; 2 postoculars; temporals 1+2; 7 supralabials, usually only the 4th touching the eye; anterior genials twice as long as the posterior, 1st ventral in contact with the latter. Scales elongate, smooth on the neck, feebly keeled at midbody, strongly keeled on the posterior part of the body and tail. V. 174-207; C. 37-55; A. 1.

Hemipenis undivided, extending to the 8th caudal plate; it is spinose throughout, the spines being large and few in number, those adjacent to the sulcus are a little smaller than

the others.

Brown above, with a black vertebral line, and on each side, a series of small black spots; an oblique, yellowish, blackedged bar on each side of the nape which may disappear in the adult; lower surface uniform yellowish. The young are light brown in colour above, with the vertebral line and dorsolateral spots very conspicuously marked.

Total length: 3 370, tail 55; \$ 440, tail 60 mm.

Range. Ceylon (Hills of Central, Uva and Sabaragamuwa Provinces). Common in the Balangoda district at between 3,500 and 4,200 feet altitude (Wall).

Genus XYLOPHIS.

Platypteryx (not of Laspeyres, 1803), Duméril, 1853, Mém. Acad. Sci. Fr. xxiii, p. 468, and Dum. & Bib. Erp. Gen. vii, 1854, p. 500 (type perroteti).

Xylophis Beddome, 1878, P. Z. S. p. 576 (type indicus); Boulenger, F. B. I. 1890, p. 283, and Cat. Sn. Brit. Mus. i, 1893, p. 303; Wall, J. Bombay N. H. S. xxix, 1923, p. 610.

Maxillary teeth small, 28 to 30, those in the middle a little larger than the others. Head not distinct from neck; nostril

between two small nasals, directed forwards and outwards; eye moderate, with rounded or vertically sub-elliptic pupil, loreal elongate, touching the eye; no preocular, anterior genials very large, in contact with the mental. Body cylindrical, scales smooth without apical pits, in 13 or 15 rows throughout, ventrals rounded tail short, subcaudals paired Hypapophyses developed throughout the vertebral column

Common characters, unless otherwise stated -Rostral small, as high as broad, frontal very large, 3 to 4 times broader than the supraoculars; I postocular; I long anterior temporal anterior genials very large, occupying most of the

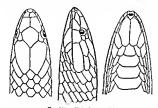


Fig. 110 -Xulophia perrolets

chin and reducing the first three infralabials to parrow strips posterior genials very small, in contact with one another or separated by a scale, first ventral in contact with the posterior genuals anal sungle

Range Hills of Southern India Two species are known

Key to the Species

Scales in 13 rows , supraocular larger than the postocular Scales in 15 rows supraocular not larger than

perroteti, p. 342 morhynchus, p 343

the postorular 259 Xylophis perroteti.

Platypierre Perrotet Dum. & Bib. 1854, Erp. Gen. vii. p. 501. (Nigers. 1979). Jan. Loos. Gen. 1855, Lav. I. p. 31, 501. (Nigers. 1979). Jan. Loos. Gen. 1855, Lav. I. p. 32, 4 and Cat. Xielphie. Perrot. 1970, 19

Mus. p. 12 (Madras Presidency; London).—Geophis microcephalus, Günther, Rept. Brit. Ind. 1864, p. 200, pl. xviii, fig. A.

Internasals very small, the suture between them half the length of that between the prefrontals; loreal more than twice as long as high; supraocular much larger than the postocular; 5 supralabials, 1st very small, 2nd long and narrow, 3rd and 4th touching the eye, 5th largest. Scales in 13 rows. V. 139-147: C. & 27-38, Q 16-20.

Hemipenis Torked for 3 of its length; it is flounced throughout, the folds on the distal part being oblique, gradually changing until at the fork they are transverse; proximal to the bifurcation there are smooth longitudinal folds; there are

no spines.

Light or dark brown, with small darker spots longitudinally arranged or united to form stripes; sometimes with an ill-defined yellow collar; lower parts dirty yellowish, spotted with black, or almost entirely black.

Gunther's type of microcephalum is uniform dark brown above and below, the scales on the posterior part of the body

and tail having a yellow centre or tip.

Total length: 5 550, tail 70; \$ 620, tail 40 mm. Range. Western Ghats (Wynaad to Tinnevelly).

260. Xylophis stenorhynchus.

Geophis stenorhynchus Günther, 1875, P. Z. S. p. 230 (Travancore; London).—Xylophis stenorhynchus, Boulenger, F. B. I. 1890, p. 304, and Cat. Sn. Brit. Mus. i, 1893, p. 304, pl. xx, fig. 1; Wall, J. Bombay N. H. S. xxix, 1923, p. 610.

Xylophis indicus Beddome, 1878, P. Z. S. p. 576 (Cumburn Valley, Madura, 5,000 feet; London).

Snout declivous and more pointed than in perroleti; internasals variable in size, sometimes very small, sometimes nearly as long as the prefrontals; loreal longer than in perroleti, often extending anteriorly nearly to the border of the mouth, reducing the second labial to a narrow strip; supraocular not or scarcely larger than the postocular; 5 supralabials, 1st minute, 5th largest, 3rd and 4th touching the eye. Scales in 15 rows. V. 108-132; C. 14-31.

Hemipenis deeply forked as in perroteti; the proximal end has transverse flounces; distally these are united and form

calyces.

Dark brown above, uniform or with three rather indistinct darker longitudinal lines, and a yellowish collar; lower surfaces uniform dark brown.

Total length: 230, tail 20 mm.

Range. Western Ghats (Anaimalais to Tinnevelly).

Genus ROIGA.

CAT SHAKES

Bonja Fitzinger 1826 Nemo Class Rept pp 29 31, 60 (type coluber irregulario Merrem), Werner, Arch. Naturg Berlin, 1924 (1920) zu, p 118, Wall, J Bombay N H 8 xxix, 1924,

Macrocephalus Fitzinger, 1843, Syst Rept p 27 (type Dipens

draptern Boir) Conyodirman Fitzinger 1843, I c a p 27 (type Dipeas pregulars)

unipolypous Figures 183, I c s p 27 (Type Dynos surguesty)
Dynoschemplus I (tamper, 1843, I c s p 27 (Type Ingonobel)
Dynoschemplus I (Type Ingonobel)
N H S stax, 1934, p 360
Werner, Arth. Natury Berlin,
1924 (1923), A, 1 2 p 118
Zaipze Pittinger 1945, I c s p 27 (type dendrophila)
Opticalon Direction 1853; Trade Class Ophila, p 98 (type synodon)

Triglyphodon Duméral 1853 I e a p 111 (type srregu

Torrodyna Hallowell 1857, Proc Acad Nat Sci Philad p 60 (type blandings) Pappophu Macleay, 1877, Proc Lann. Soc N.S Wales, u, p 39

(type latterpe-irregularie) Liophalus Cope 1895, Proc Acad Nat Sci. Philad. p 427 (type fuecus)

Lapsas Boulenger F B I 1890, p 357

Maxillary teeth 10 to 14, subequal in size, followed by 2 or 3 enlarged, grooved fangs, palatine teeth often strongly enlarged ectopter good more or less distinctly forked

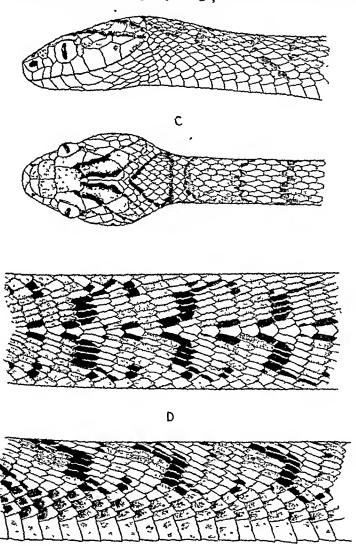


Fig. 111—Borgo Irigonata A. Maxilia B Palato maxillary arch C Two views of head (B.M. 62 8 28 79-80) D Dorsal and lateral Pattern.

anteriorly, the two branches articulating with the maxilla Head very distinct from neck, eye large, with vertical pupil Body more or less compressed, scales smooth, more or less oblique. oblique, with apical pits, in 19 to 29 rows, the vertebral series more or less enlarged . ventrals rounded or obtusely angulate isterally, tail moderate or long, subcaudals paired Hypapophyses present on the posterior dorsal vertebre in all the Asiatic species

BOIGA. 345

Common characters, unless otherwise stated:—Nostril between two nasals, the posterior more or less distinctly concave; internasals shorter than the prefrontals; frontal as broad, or nearly as broad, as long; eye large, its diameter at least twice



its distance from the border of the mouth, equal to its distance from the nostril; rostral small, squarish or pointed posteriorly; 2, rarely 3, postoculars; 8 supralabials, 4th, 5th and 6th touching the eye; analentire; hemipenis not forked.

The apical pits may be single or paired. They are single in multimaculata, ochracea, trigonala, gokool, ceylonensis, multifasciata and cynoden In the others they may be single or double, but there is no regular order in which they are arranged D barness not examined

In all the members of this genus that I have examined,

the anal sac, particularly in the female, is unusually long

Wall, under Il multifasciata (1909), has commented upon what may occur in the members of this genus, namely, the division and remnian of the vertebral row of scales, so that the number of scale rows is alternately diminished and increased I can confirm his remarks

Range Southern Asia Tropical Africa, Papuasia, Tropical

Australia

Some 25 species are known

All the members of the genus included in this work are nocturnal and mainly arboreal in their habits. They prefer bushes and shrubs to high trees, and when at rest coil them selves into a ball rather than he extended as do other anakes (Ahriulia, Dryophus, Chrysopelea) As far as is known, all are oviparous Most of them are extremely vicious in disposition, and their method of coiling the body and mode of attack has been described by Wall and is here given under B trigonala All those I know have the habit of "rattling" the tail when agitated Their food, as one would expect from their arboreal habits, consists mainly of birds and their eggs, and the tree haunting lizards, in particular the members of the genns Calotes They kill their prey by constriction

Key to the Species.

I Scales in 19 or 21 (23) rows

A. Preocular not reaching the upper surface of the bead. Scales in 19 rows, body with large rounded mote

Scales in 19 rows; body uniform brown above . V 221-246, C 89-107 Scales in 21 rows , body imiform brown above ,

Y 223-252 , C 160-119 Scales in 21 rows, vertebrals feebly enlarged, their posterior margins rounded or ob

tusely pointed, a dorsal series of branched Scales in 21 (19) rows, vertebrals strongly enlarged, their posterior margins truncate

or concave, a dorsal series of branched #DOt#

B Preocular reaching the upper surface of the head Scales in 19 rows , 3 preoculars , V 208-229 , C 98-100

polool, p 351

barnen, p 354

rulimaculata p 347

ochraces walls, p 349

ochracea ochracea,

trigonala, p 349

forsteni, p. 358.

Scales in 19 rows; hemipenis not spinons: V. 237-242; C. 118 120	quinaumainte e 050
Scales in 10 or 21 (23) rows; hemipenis spinous; back with dark vertebral spots or	quincunciata, p. 353.
transverse bars	ceylonensis, p. 351.
cross bars and whitish vertebral spots Scales in 21 rows; temporals small, scale-like;	multifasciata, p. 357.
back with large elongated spots Scales in 21 rows; colour uniform green	multitemporalis, p. 356.
(brown in the juvenile)	cyanca, p. 355.
II. Scales in 23 to 29 rows.	
Scales in 23, rarely 25, rows; C. 122-157 Scales in 23 rows; C. 95-102	cynodon, p. 357. dightoni, p. 359.

261. Boiga multimaculata.

Scales in 25-29 rows; C. 102-119

LARGE-SPOTTED CAT SNAKE.

Russell, 1801, Ind. Serp. ii, p. 27, pl. xxiii (Java).

Dipsas multomaculata Boie, 1827, Isis, p. 549 (Java).—Dipsas multimaculata, Schlegel, Phys. Serp. ii, 1837, p. 265, pl. xi, figs. 4 & 5, and Abbild. Amphib. 1844, pl. xiv, figs. 13-15; Boulenger, F. B. I. 1890, p. 360.—Dipsadomorphus multimaculatus. Boulenger, Cat. Sn. Brit. Mus. iii, 1896, p. 64; Wall & Evans, J. Bombay N. H. S. xiii, 1900, p. 346, and 1901, p. 615; Wall, ibid. xiii, 1901, p. 534, and xxix, 1924, p. 869, and xxx, 1925, p. 818, and xxxi, 1925, p. 564; Prater, ibid. xxxviii, 1935, p. 201.—Boiga multimaculata, Smith. J. N. H. S. Siam, vi, 1923, p. 203; Pope, Rept. China, 1935, p. 330, pl. xv, D-I; Bourret, Serp. Indochine, 1936, p. 311.

Boiga multimaculata hainanensis* Mell, 1929, Lingnan Sci. J. viii, p. 213

viii, p. 213.

Boiga multimaculata indica Mell, 1929, Lingnan Sci. J. viii, p. 213

(Continental India).

Maxillary teeth 9 or 10+2; anterior palatine teeth not strongly enlarged; 1, rarely 2, preoculars, not reaching the upper surface of the head; temporals 2+2 or 2+3; posterior genials as long, or nearly as long, as the anterior, usually in contact with one another. Scales in 19:19:15 or 13 rows, the vertebrals fairly strongly enlarged; V. 202-245; C. 80-109.

Hemipenis extending to the 10th-12th caudal plate; the distal half is calyculate, the cups being thick-walled and feebly scalloped; on the ventral surface there are a number of coarse spines; the spines are fleshy, only the tip being exposed; there are about 16 in lateral series; the proximal half is spineless.

Greyish brown above, with two alternating series of large, rounded or oval, dark brown, often light-edged, spots, and two other series of much smaller spots on the sides of the body; small vertebral spots may be present; two broad dark brown or black longitudinal stripes on the top of the

^{*} Corrected to sikiangensis Mell, in his "Separate" sent to me.

head diverging posterioris a longitudinal stripe or elongated mark on the nape and another from the eye to the angle of the month lower parts whitish marbled or spotted with frown and with a series of brown spots along each side

Total length \$ 800 tail 190 Q 900, tail 190 mm

Pange Burma as far north as lat 22°, Assam (Sylbet), Siam and the adjacert islands of the Gulf as far south as lat 12' French Indo China Southern China Hainan Hong Kong

There is no evidence to show that it inhabits Tenasserim or Seam south of lat 12° or the Malay Peninsula but it

occurs in Java Sumatra and Borneo

The Large spotted Cat Snake is not uncommon in northern Tenasserim Southern Burma and Central Siam, inhabiting forested localities It feeds on lizards (mainly Calotes species) and small birds in disposition it is fierce and bites readily when handled

262 Bolga ochracea

TAWYY CAT SHARE

(Bosga ochracea ochracea)

Dipsor ochraceus Ounther 1868, Ann. Mag Nat Hist (4) 1,

p 425 (Pegu London)

P 43; Pegu London Diposa Recognizu (non Biyth) Sioberka, 1871 J A S Bengal, xi, p 439 Anderson, P Z S 1871 p 185 (in part), Sculinger F B I 1859 p 36 (in part) —Diposaconorphia Acrophorts (non Biyth) Boulenger Cal Sn. Erit Mus. in, 1856 p 58 (in part) Wall, Rec Ind. Mus ui, 1909 p 184, and J Bombay h R S xix, 1909 p 332 Annandale Rec Ind Mus in 1902 and 1904 p 332 Annandale Rec Ind Mas ru, 1909 p 281

Dipadomorphus stoliczkie Well, 1909 Rec Ind. Mus m. p 155

(Durjeeling no type made) and J Bombay N H.S xxx, 1921 p 872—Bosya stolecter Shaw Shebb & Barker J Bengal N H S xx, 1940 p 68

(Borga ochracea walls)

Dipsus herogenotus (non Blyth) Stol czka, 1870 J A. S Bengul xxxix, p 198 pl xi, fig 4 Wall & Evans, J Bombsy N H. S Ziu 1901 p 615 Dipardomorphus Aczugonatus (non Blyth) Wall, J Bombay N H S xxxx, 1924 p 870 and xxx, 1925 p 818 and xxx, 1926 p 564, Venning, ibid. xx, 1910 p 342, Boulenger Cat Sn. Birt Mus in, 1896 p 65 (in part), Annan dale. Rec. Ind. Ven. ... 1900 - 287. dale, Rec. Ind. Mus m, 1909 p *81

Maxillary teeth 10 to 12+2, anterior palatine teeth not strongly enlarged, normally I preocular, not reaching the upper surface of the head temporals 2+2 or 2+3 anterior genuls about as long as the posterior latter in contact with one another or separated by small scales, vertebrals strongly enlarged

Hemipenis as in multimaculata

Greyish reddish or yellowish brown above (I coral red in life), some of the scales finely edged with black and forming BOIGA. 349

more or less distinct transverse lines or bars, best marked in the young; the vertebral series of scales sometimes lighter than the others; paler below; lips and chin whitish.

Total length: 3 1050, tail 235; 2 1100, tail 215 mm.

Two races :--

Boiga ochracea ochracea.

Scales in 21:21:17 rows. V. 223-252; C. 100-119.

Range. Eastern Himalayas (Sikkim, Darjeeling district, Buxar Duars); Assam (Goalpara, Sibsagar, Cachar). A common snake in the Duars.

Boiga ochracea walli, nom. nov.

Scales in 19:19:15 rows. V. 221-246; C. 89-107.

Range. Burma, south of lat. 25°: Tenasserim; the Andaman and Nicobar Islands.

Wall has pointed out (1909) that Blyth's hexagonatus is a juvenile specimen of cyanea, but his wish to retain the name hexagonatus by transferring the authorship to Stoliczka is not possible under the Rules of Nomenclature. The name hexagonatus must become a synonym of cyanea, and the next one available is Günther's ochracea. The type has 21 scale-rows and is therefore the Himalayan form, and the locality (Pegu) from which it is said to have come is no doubt an error. Beddome, from whom the specimen came, was never in Burma, and his localities have been shown to be incorrect on many occasions.

Wall's stoliczkw. with 21 scale-rows, therefore becomes a synonym of ochracea ochracea, and the Burma form is left without a name. I have pleasure in naming it after him. I

regard it as a race of ochracea.

263. Boiga trigonata.

INDIAN GAMMA.

Russell, 1796, Ind. Serp. i, p. 20, pl. xv (Vizagapatam).

Coluber trigonatus Schneider, 1802, in Bechst. transl. Lacép. iv, p. 256, pl. xl, fig. I (Vizagapatam).—Dipeas trigonata, Blyth, J. A. S. Bengal, xxiii, 1855, p. 294; Blanford, J. A. S. Bengal, xlviii, 1879, p. 131; Boulenger, F. B. I. 1890, p. 358, and P. Z. S. 1891, p. 633; Wall, J. Bombay N. H. S. xvi, 1905, p. 307.—Dipeadomorphus trigonatus, Boulenger, Cat. Sn. Brit. Mus. iii, 1896, p. 62; Wall, J. Bombay N. H. S. xviii, 1907, p. 120, and 1908, p. 543, col. pl., and xix, 1909, p. 267, and xxix, 1919, p. 569, and xxix, 1924, p. 871, and Sn. Ceylom, 1921, p. 269; ingoldby, J. Bombay N. H. S. xxix, 1923, p. 129; Fraser, ibid. xxxix, 1937, p. 482; Shaw & Shebb., J. Darjeeling N. H. S. iv, 1930, p. 55; Shaw, Shebb. & Barker, J. Bengal N. H. S. xv, 1940, p. 64.—Boiga trigonatum, Nikolsky, Faune de la Russie, 1916, p. 187, pl. vi.

Dipsadomorphus trigonata var. melanocephalus Annandale, 1904,

J A S Bengal luxm. p 202, pl 9, figs 3 & 4 (Perso-Baluchatan frontier Calcutta)

Coluber sugalistics Shaw 1892, Gen. Zool. sis. (2) p 526 (India; based on Russ lis ni i

Coluber caternalarie Dandin, 1803, Hist Nat Rept vi, p 253,

pl lant bg 2 (Bengal Paris)

Maxillary teeth 8 to 10+2, anterior palatine teeth not strongly enlarged I preocular, not reaching the upper surface of the head temporals 2+3, posterior genuals as long as, ur longer than, the anterior, separated from one another by small scales Scales in 21 21 15 rows, vertebrals feebly enlarged V 206-256 C 75 96

Hemipenis as in raultimaculata

Light yellowish or greyish brown above, uniform, or speckled with darker, and with a vertebral series of large, light, blackedged, angular or A shaped, or y-shaped spots, which may be connected to one another on the vertebral line, lower parts whiti-h, uniform or with small black apots on the outer margins of the ventrals head with light symmetrical markings, sometimes black edged, viz , a median stripe starting from the frontal and diverging at the posterior end of the parietals, the two arms extending on to the nech , a light stripe from above the eye to the angle of the jaw

Annandale a melanorephalus is based on three specimens with dark heads

Total length & 825, tail 140 . 9 990, tail 180 mm

Range Ccylon (Uva Province), the whole of the Peninsula of India, extending in the north-west to Baluchistan, the h W Frontier Provinces and Transcaspia, W Himalaysa (Sahathu , Almora) , Eastern Himalayas (Sikkim , Northern Bengal)

Wall (1908 and 1921) has given good a counts of the babits of this common Indian snake, and his colour plate is excellent The following points are taken from his remarks --

In disposition, like other members of its genus, it is one of the most intrepid snakes I know With no further provocation than being suddenly disturbed, it will assume an attitude of dehance and act boldly on the offensive. The attitude edopted is very characteristic. The head and forebody are roised well off the ground, the latter thrown into loops, more or less in a figure of 8, the head possed in the middle Prior to the stroke the body is inflated and deflated with agitation, and the tail briskly vibrated The strake is delivered with great malice, the jaws open widely, and as soon as it is delivered the creature resumes its former attitude, only to strike again and again it feeds mainly on hzards of the genus Calotes, but will also devour small birds and mammals, killing them by constriction From 3 to 11 eggs are laid, the young when born measure between 237 and 260 mm in length Females appear to grow much larger than males

351 BOIGA.

264. Boiga gokool,

EASTERN GAMMA.

Dipeas gokool Gray, 1834, Ill. Ind. Zool. ii, pl. 83, fig. 1 (Bengal; London); Boulenger, F. B. I. 1890, p. 360.—Dipsadomorphus golvol, Annandale, Rec. Ind. Mus. 1912, p. 49; Boulenger, Cat. Sn. Brit. Mus. iii, 1896, p. 64; Wall, J. Bombay N. H. S. xix, 1910, p. 831, and xxix, 1924, p. 871; Shaw & Shebb.. J. Darjeeling N. H. Soc. iv, 1930, p. 36; Shaw, Shebb. & Barker, J. Bangal N. H. Soc. xv. 1940, p. 36; J. Bengal N. H. Soc. xv, 1940, p. 64.

Closely related to trigonata of which it appears to be the Indo-Chinese representative. It differs in the following characters: -- Maxillary teeth 9 to 12+2; 1 or 2 preoculars; posterior genials in contact with one another. Scales in 21 (19): 21 (19): 17 rows, vertebrals strongly enlarged. V. 219-232 : C. 87-103.

Hemipenis extending to the 10th caudal plate; the distal half is calyculate, the cups being large, longer than broad, and finely scalloped with spinous edges; the proximal half is

as in multimaculata.

Yellowish brown above, with a series of vertical Y-shaped or T-shaped markings on each side of the back, separated from one another by a light vertebral line; head with a large, arrow-shaped, brown, black-edged mark, longitudinally bisected; a black stripe from the eye to the angle of the mouth; lower parts whitish, with an almost continuous series of brown or black spots on each side of the ventrals; labials brown.

Total length: 3 800, tail 170; \$ 870, tail 175 mm. Mr. P. E. Barker tells me that he obtained one 4 feet in length

(1200 mm.)

Range. The Eastern Himalayas as far west as Darjeeling;

Assam as far south as lat. 24° N.; Chittagong.

A common snake in the Duars. In disposition and habits like trigonata (Wall, 1910).

Variation :- A specimen labelled Chittagong (? Chittagong Hills) in the Bombay Coll. has only 19:19:15 scale-rows.

265. Boiga ceylonensis.

CEYLON CAT SNAKE.

Dipsadomorphus ccylonensis Gunther, 1858, Cat. Col. Sn. Brit. Mus. p. 176 (Ceylon; London); Boulenger, Cat. Sn. Brit. Mus. iii, 1896, p. 66; Well, Rec. Ind. Mus. 1909, p. 152, and J. Bombay N. H. S. xxvi, 1919, p. 570, and xxix, 1924, p. 870, and Sn. Ceylon, 1921, p. 278.—Dipsas ceylonensis, Günther, Rept. Brit. Ind. 1864, p. 314, pl. xxiii, fig. B; Boulenger, F. B. I. 1890, 2350 p. 359.

Dipsas nuchalis Günther, 1875, P. Z. S. p. 233 (West coast of India, London).—Dipsadomorphus nuchalis, Wall, Rec. Ind. Mus. iii, 1908; p. 153, and J. Bombay N. H. S. xxi. 1911, p. 279, and xxvi, 1918, p. 571, and xxix, 1924, p. 872.
Dipsadomorphus beddomei Wall, 1909, Rec. Ind. Mus. iii, p. 152 (Ceylon), and Sn. Ceylon, 1921, p. 282, and J. Bombay N. H. S. xxii. 1934 ... 570 N. H. S. xxix, 1924, p. \$70.

Dipsedomorphus undamaneness Wall, 1909, Rec Ind Mus in. p 153 (Andamara Celeutta) - Borga undamanenne Wall, J Bombay N H S garz, 1924 p 873

Maxillary teeth 12 to 20+2 anterior palatine teeth not strongly enlarged I precedur, extending to the upper surface of the head often touching the fronta; temporals 3+3 or 3-4 separate variable, the posterior usually in contact with one another at least anteriorly Scales in 19 or 21 (rarch, 2d) rows vertebrals strongly enlarged V 214-267 C 90 133

Hemipenis as in multimaculata

in the following table -

Grevish brown above with a series of vertebral, dark brown, black edged or blackish transverse, rarely oblique, spots, sometimes continued or alternating, as transverse bars on the sides of the body Each vertebral spot covers from b to 8 scales, and mustly each scale has a dark edging; nape with a dark blotch or transverse bar, sometimes broken up usually a distinct dark streak from the eye to the angle of the mouth, lower parts yellowish white, speckled or powdered

with brown, a more or less continuous series of dark brown spots on the outer sides of the ventrals generally present Total length & 1020, tail 240 , Q 1315, tail 255 mm.

Wall, who has examined many more specimens than are available to me, states that the male appears to grow much larger than the female It must be remembered, however, that his conception of ceylonensis is restricted to Ceylon and southern India

He has divided regionensis into four forms, giving each one specific tank The differences between them are summarized

Вресия	Max teeth	Scales	v	С	Range	
ceyloneness	14-20+2	19 19:15 or 13	214-235	98-108	W Chata, Caylon.	
beidomes	12-13+2	19 19 15 or 13	248-265	113-127	W Chats, Ceylon,	
nuchalia	14+2	21 (23) 21 (23) 15	234-251	90-105	Ganjam Dist W Chais, Nepal, Assam	
andaman.	13+2	21:21 IS	259-207	118-133	Andaman ja	

These figures are confirmed by the material in the British Museum which I have examined, but, except for the differences in the number of scales round the body and the ventral and

BOIGA, 353

caudal counts, I am unable to find any morphological characters by which to separate them; it is possible that more material will upset Wall's figures, and leave us with one extremely variable species and a number of races. The wide range in ventral and caudal counts cannot be correlated with sexual difference.

Range. Nearly all the specimens have been obtained in the Western Ghats and Ceylon, and in these regions it is not uncommon. Occasional individuals have been recorded from Ganjam, Berhampur in Orissa, Chitlong in Nepal, and Sibsagar and Northern Cachar in Assam. All of these latter have 21 scale-rows at mid-body and I am not satisfied that they are ceylonensis. The two specimens, both juveniles, from Nepal (Indian Museum) differ in having only two anterior temporals and a somewhat different colour-pattern, the vertebral spots being absent and in their place a series of transverse or oblique bars; this colour-pattern agrees with the specimen described by Wall (xxi, 1911) from Orissa. I have not seen the specimens mentioned by him from Assam or Ganjam. The form from the Andaman Islands is also referred to under B. cyanea.

266. Boiga quincunciata.

Dipsadomorphus quincunciatus Wall, 1908, J. Bombay N. H. S. xviii, p. 272, pl. — (Tinsukia, Assam; London; type lost), and xix, 1910, p. 832, and xxix, 1924, p. 869.—Boiga quincunciata, Smith, Rec. Ind. Mus. xlii, 1940, p. 484.

Maxillary teeth 11 or 12+2; anterior palatine teeth not strongly enlarged; loreal in one specimen united with the

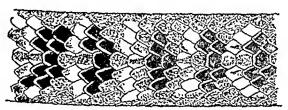


Fig. 112.—Dorsal pattern of Boiga guincunciata.

prefrontal; 1 preocuiar, reaching the upper surface of the head; temporals 2+3 or 3+3; posterior genials as large as or a little larger than the anterior, partly or completely separated by small scales. Scales in 19:19:15 or 13 rows, vertebrals fairly strongly enlarged. V. 237-253; C. 118-125; A: 1 or 2.

Hemipenis extending to the 10th caudal plate; reaching from the tip of the organ nearly to the base are two prominent vol. III.

folds, composed of large, fitchy, closely set, pointed papills; between them and the sulcus are similarly-shaped papills arranged in longitudual series, but less closely set, in general appearance they rewemble the fleshy spinose papills which hempenes of the outher members of the genus have, but I am unable to detect any spines, the extreme tip of the organ is call valids.

Yellowsh or greynth brown above, finely speckled with durk broan and with a vertebral series of dark brown or black spots or blotches, each spot covers from 6 to 8 scales, and each scale is edged with white; between the spots are more or less distinct whitch, mean, indees of the body speckled or spotted with brown, with or without a sense of small, more or less distinct, brown spots, alternating with the vertebral ones, yellowish white below, thickly speckled with brown and with a more or less distinct series of white-and brown spots on the outer margins of the ventrals; naps with three longitudinal stripes, up of the head brown, the frontial and panetats black, edged with white; a black stripe from the eye to the angle of the mouth.

Total length & 1550, toil 365; Q 1260, tail 310 mm

Range Assam (Tinsukia and Rangara, both near Dibrugath).
Upper Burma (Hungnan, north east of Fort Hertz)
Anown from four specimens, and the type.

267 Bolgs barnesl.

Depart barners Günther, 1889, P. Z. S. p. 508 plxi. Sg. 3 (Ceylon: London), Bodenger, F. B. 1, 1890 p. 259 — Department Debarters, Bodenger, Cat. St. Britt. Mus. n. 1890, p. 73, Wall. Sa. Ceylon, 1921, p. 281, and J. Borntay N. H. S. 2215, 1924, p. 849.

Manilary terth 13 or 14+2, anterior pelatine tech not strongly enlarged, yet three times as large as its distance from the mouth, longer than its distance from the north; 3 of the mouth, longer than its distance from the north; 3 the temporal of the upper extract of the lead temporals 3-7.3. Superlabulas, 4th and 6th touching the eye, the 3rd just excluded, anterior genulas smaller than the posteron, titter completely separated by small scales. Socies in 19–19–16 forws, vertebrals feebly enlarged. V 208-207, C 94-209.

Hemipenia as in multimaculata

Greysh brown above, with lighter, black edged, transverse prots, and a series of smaller black gots on each ade, sometimes extending on to the ventral; lower parts whith, healy powdered with brown, labala with black sturms; a dark stripe from the eyo to the angle of the mouth, bordered alove by a labit one.

Total leugth of 650, tail 130 mm

BOIGA. 355

Range. Ceylon (Gangaruwa).

Known from two specimens, the second being in the Colombo Museum. The type, which is the only one that I have seen, is a juvenile, and this probably accounts for the unusually large eye.

268. Bolga cyanea.

GREEN CAT SNAKE.

Triglyphodon cyaneum Dum. & Bib., 1854, Erp. Gen. vii. p. 1079 (type loc. unknown; Paris).—Dipsas cyanca, Boulenger, F. B. I. 1890, p. 361; Evans, J. Bombay N. H. S. xiii, 1901, p. 553; Wall & Evans, ibid. xiii, 1900, p. 188.—Dipsadomorphus cyaneus, Boulenger, Cat. Sn. Brit. Mus. iii, 1896, p. 72; Evans, J. Bombay N. H. S. xvi. 1904, p. 170: Wall, ibid. xviii, 1908, p. 329, and xix, 1909, p. 353, and Rec. Ind. Mus. iii, 1909, p. 154; Smith & Kloss, J. Nat. Hist. Soc. Siam, i. 1915, p. 246.—Boiga cyanea, Wall, J. Bombay N. H. S. xxix, 1924, p. 873; Smith. Bull. Rafiles Mus. no. 3, 1930, p. 64; Bourret, Serp. Indochine, 1036, p. 317; Shaw, Shebb. & Barker, J. Bengal N. H. Soc. xv, 1940, p. 67.

Dipeas nigromarginata Blyth, 1854, J. A. S. Bengal, xxiii, p. 294

(Assam)

Dipsas hexagonatus Blyth, 1856, J. A. S. Bengal, xxiv, p. 360 (no type loc. given); ? Stoliczka, ibid. xxxix, 1870, p. 198 (in part).

Dipras bubalina Gunther, 1864, Rept. Brit. Ind. p. 311, pl. xxiv, fig. E (type loc. unknown; London); Stoliczka, J. A. S. Bengal, xl, 1871, p. 441.

Maxillary teeth 12 to 14+2; anterior palatine teeth not strongly enlarged; 1 preocular, reaching the upper surface of the head; temporals 2+3; posterior genials about as long as the anterior, in contact with one another or separated by small scales. Scales in 21:21:15 rows, vertebrals fairly strongly enlarged. V. 237-257, with a feeble lateral keel; C. 124-138.

Hemipenis extending to the 12th caudal plate; the distal half is calyculate, the cups being very large with scalloped, spinose edges; proximal to this there is a short area having 6-8 longitudinal series of thick, fleshy spines; the remainder of the organ has smooth longitudinal folds.

Green above; greenish white below, uniform or spotted with darker green; interstitial skin black; chin and throat

blue in life.

The young when born are light brown or reddish or pinkish, with or without indications or dark cross-bars (fide Blyth and Stoliczka).

Total length: 3 1400, tail 340; 2 1860, tail 440 mm.

Range. Darjeeling district (Tindharia); Assam (Cachar, Sonapur, Monacherra); Burma (Maymyo, Rangoon district, Tavoy); Siam (Nakon Lampang, Dong Rek Mts. and islands

2 $_{\mathrm{A}}$ 2

of the Guif viz, Koh Pennan, Koh Pa Ngan), Cambodia

(Bokor) Cochin China , Pulo Condore

The Green Cat Snake, in spite of its wide distribution, is nowhere common It is sluggesh in its habits and makes no attempt to escape when handled, but opens its mouth widely and remains on the defensive With its green head, large golden brown eyes and the black inside to its mouth, it presents a strange sight. One that I kept in capturity ats in succession 5 snakes namely, 1 Oligodon teniotus, 2 baby Ancistrodon rhodostoma, and 2 Teimeresurus albolabris. The last viper was fully grown, and there must have been a long struggle between them, to judge by the appearance of the cage with everything scattered about in disorder

The specimen in Boulenger's Catalogue, p 72, labelled

Darjeeling is Boiga multifasciata

The literature concerning Dipses hexagonatus by Blyth 1856 nd 1863 and by Stoliczka 1870, is not as clear as it might be Blyth apparently had five specimens, all inveniles. One is Borga cyanza and may have come from Calcutta (fide Ganther) It is described by Blyth as "bright ruddy ferrugmons, in clining to coral red , paler below and mottled with black bordering some of the scales of the upper part' The other four which undoubtedly came from the Andamans are referred here to Borga ceyloneners, for I cannot find any morphological character by which to separate them from that aprecies.

269 Beigs multitemporalis.

Borgs mulistemporate Bourret, 1935 Bull. Gen. Instr Pub Hunot, II, 8, p 266 and Serp Indochine 1935 p 310, fig head (Tam-dao Tong King ; Paris)

Maxillary teeth 11 or 12+2, anterior palatine teeth not strongly enlarged 1 or 2 preoculars, reaching the upper surface of the head, temporals small, scale-like, 4+5 or 6. 9 supralabials 3rd, 4th and 5th touching the eye, posterior genials as long as the anterior, separated from one another by small scales Scales in 21 21 17 rows, the vertebrals scarcely enlarged V 240, C 139, A 2

Light brown above, with a vertehral series of large elongsted dark brown black-edged spots, and smaller and less distinct ones on the sides of the body, some of the vertebral spots are confluent with one another, thus forming a annous stripe, the scales of each spot are edged with black belly whitish marbled or clouded with brown, head light brown above speckled with black, a round black spot on the middle of the nape

Known only from the type-specimen, which is a male

BOIGA, 357

270. Boiga multifasciata.

HIMALAYAN CAT SNAKE.

Dipsas multifasciata Blyth, 1861, J.A.S. Bengal, xxix, p. 114 (Subathu, Simla: originally in Calcutta); Günther, Ropt. Brit. Ind. 1864, p. 313; Stoliczka, J.A.S. Bengal, xxxix, 1870, p. 199, pl. xi, fig. 6, and xl, 1871, p. 440.—Dipsadomorphus multifasciatus, Boulenger, Cat. Sn. Brit. Mus. iii, 1896, p. 69; Wall, Roc. Ind. Mus. i, 1907, p. 157, and J. Bombay N. H. S. xix, 1909, p. 352, and xxvi, 1919, p. 866, and xxix, 1924, pl. 871; Shaw & Shebb., J. Darjeeling N. H. Soc. iv, 1930, p. 56; Shaw, Shebb. & Barker, J. Bengal N. H. Soc. xv, 1940, p. 65.

Maxillary teeth 10 or 11+2; anterior palatine teeth not strongly enlarged; 1, sometimes 2, preoculars, reaching the upper surface of the head; temporals 1+2 or 2+3; posterior genials as long as the anterior, usually in contact with one another. Scales in 21:21:15 rows, vertebrals not strongly enlarged. V. 223-250: C. 100-115.

Hemipenis not known.

Greyish brown above, finely speckled with black, and with narrow, black, transverse or oblique bars; these may meet one another on the vertebral line, forming A-shaped marks, in the apex of which there is a more or less distinct white spot; a black longitudinal stripe on the nape and two more on the top of the head; another from the eye to the angle of the mouth; lower parts whitish, thickly spotted and speckled with black.

Total length: 9880, tail 185 mm.

Range. The Himalayas; Western Himalayas (Subathu, Mussooree, Naini Tal, Muktesar); Eastern Himalayas (Nepal, Darjeeling district).

Found generally above 5,000 feet altitude.

271. Boiga cynodon.

Dipsus cynodon Boie, 1827, Isis, p. 549 (Sumatra); Schlegel, Phys. Serp. 1837, ii, p. 268, pl. xi, figs. 10 & 11.—Dipsudomorphus cynodon, Boulenger, Cat. Sn. Brit. Mus. iii, 1896, p. 78; Woll, J. Bombay N. H. S. xix, 1909—1910, pp. 353, 832, & 899.—Boiga cynodon, Wall, ibid. xxix, 1924, p. 874, and xxx, 1925, p. 818.

Maxillary teeth 11 or 12+2; anterior palatine teeth strongly enlarged; 1 preocular, reaching the upper surface of the head; temporals 2+3 or 3+3; 8 or 9 supralabials, 3rd, 4th and 5th, or 4th, 5th and 6th touching the eye; posterior genials larger than the anterior, in contact with one another anteriorly, often abruptly diverging posteriorly and separated by small scales. Scales in 23, rarely 25:23, rarely 25:15 rows, vertebrals strongly, or very strongly, enlarged. V. 250-282, with an obtuse lateral keel; C. 120-157 (for specimens from the Indo-Chinese region).

Hemipenis extending to the 17th caudal plate, the distal is calyculate the cups being large, longer than broad, with scalloped but not spinose edges, the remainder of the organ has smooth longitudinal folds. the two areas are sharply defined from one another

Brownish greyish or pinkish above, with dark brown or black chevron shaped spots, very distinct anteriorly, but which may become indistinct or disappear entirely, posteriorly white spots or cross hars sometimes present, best marked on the posterior part of the body a series of large white (pink in life), dark edged rounded or rosette shaped spots on the outer margins of the ventrals and usually including scale rows I and 2 maps with two longitudinal, parallel, black stripes another from the eye to the angle of the mouth yellowish or greyish below, more or less thickly powdered with brown or black. Some individuals are very pale in

colour with the dark markings hardly distinguishable Total length & 1440, tail 330 . Q 1680, tail 370 mm

Larger specimens have been recorded from the Malayan region, they also differ in coloration (Form B of Boulenger, Cat 111 p 791

Range Bengal (Jalpaiguri), Assani (Garo and Naga Hills, bameguting, Cachar, Nahar Khatiya). Burms, as far north as lat 26° (Mystkyma), Sum, Cambodia, the Malay Peninsula and Archipelago

B cynodon is a snake of the plane and of the hill country at low altitudes It is sluggesh in its disposition, those that I have kept could be freely handled, even when newly caught Its main food appears to be birds and their eggs

272 Boiga forsten).

Trigisphoton forstens Dum & Bib 1854 Erp Gen vin p 1077 (type loc unknown)—Dyson forstens, Ginther, Repl. Brit Ind 1864, p 309, Anderson, P Z 8 1871, p 143, Stolerston, J & S. Bengal, xt. 1871, p 439, Eunlenger, F. B 1 1839 p 362—Dysondomorphis forstens, Eoulenger, G. 248, Bn H Mar M. 1896, p 80, Well, J Bondwy N H S xx. 1909, p 137, and xxx 1909, p 37, well xx 1800, p 30, well, x 1800, p 300, p 300, p and xxvi, 1919 p 571.—Boso forsten, Wall, Sn. Ceylon, 1921, p 285 and J Bombey N H. S xxxx, 1924, p 874.
Depas forsten var ceylonenus Anderson, 1871, P Z S p 187 (Ceylon)

(Coylon)

Triglyphodon tessellatum Dum & Bib 1854, Erp Gen. vu. p 1082 (Java", Paris)

Maxillary teeth 10 to 12+2, anterior palatine teeth strongly enlarged, diameter of the eye not twice its distance from the mouth, I preocular, reaching the upper surface of the head, temporals amail, 3+3 or 3+4. 8 to 11 supralahals, 3rd, 4th and 5th, or 4th, 5th and 6th touching the eys, genuls variable in size, the posterior pair generally BOIGA.

359

separated from one another by small scales. Scales in 25 or 27:27 or 29:17 rows, vertebrals feebly or strongly enlarged. the enlargement very variable, even in the same individual. V. 254-273, with a distinct lateral keel; C. 102-119.

Hemipenis extending to the 12th caudal plate:

cynodon, but the folds crenate.

Brown or reddish above, uniform, or with more or less regular, angular black spots or cross-bars, with white spots between them; these are most distinct on the anterior part of the body, and posteriorly may be replaced by a chequered pattern; a black stripe on the head from the frontal shield to the nape, and two more on the nape parallel with it; a broad black stripe from the eye to the angle of the mouth: labials with black spots or sutures (in those specimens which have dark markings on the body); belly uniform whitish (in those specimens which are of uniform colour above) or heavily spotted or powdered with brown; the lateral keel usually white.

Total length: 3 1800, tail 340; \$ 1600, tail 340 mm.

(2312 mm., Wall.)

Range. Ceylon and Peninsular India; Western Ghats (Matheran to Travancore); Ganges Valley (Orcha, Fyzabad, Gorakhpur, Balrampur, Purnea, Manbhum); Orissa (Berham pore); Bengal (Sijna); Eastern Himalayas (Darjeeling district, fide Wall). It inhabits both the plains and the hills.

Wall (1921), writing of its habits, states:-" Visiting the Maharajah of Balrampur some years ago, I found some very fine specimens displayed by his professional snake catchers, who assured me that they lived in pairs, and frequented holes in the mohwa trees (Bassia latifolia), in which they were quite common. It has been described to me as a fierce snake, and what I saw amply confirmed this.... Mr. N. Warde tells me that it is a voracious poultry eater, and also robs pigeon houses. One invaded one of his servants' quarters at night ... and when he advanced into the room, found the snake swallowing a white fowl, and it continued to swallow with apparent unconcern, in spite of the assembled spectators. A specimen brought to me in Orissa had fed on a large bat. One in captivity ate freely the lizards Calotes versicolor and sparrows, and on one occasion a mouse. The Balrampur snakemen told me it lays from 7 to 9 eggs in the hot weather."

273. Boiga dightoni.

Dipsas dightoni Boulenger, 1894, J. Bombay N. H. S. viii, p. 528, pl. — (Pirmad; Travancore State; London); Ferguson, ibid. x, 1895, p. 73.—Dipsadomorphus dightoni, Boulenger, Cat. Sn. Brit. Mus. iii, 1896, p. 69; Annandsle, J. A. S. Bengel, laxiii, 1904, p. 210; Wall, J. Bombay N. H. S. xxix, 1924, p. 879

Maxillary teeth 14+2; anterior palatine teeth strongly

enlarged. I preocular, reaching the upper surface of the head, temporals 3+3 Scales in 23:23:15 rows, vertebrals strongly enlarged V 228-241, with a feebly distinct lateral keel . C 95-102

Hemipenia not known

'Pale reddish brown above, without dark markings, a series of salmon red blotches along the back. Head pale brown, with minute blackish dots; lower parts yellowish, finely dotted with brown, the outer ends of the ventrals salmon pink (Boulenger)

Only three specimens are known Total length of 1100, tail 220 mm. Range Travancore (Pirmed)

Genus TARBOPHIS.

Terbophu Fleuchmann, 1831, Data Dalmat Serp p 17 (1796 fallaz): Boulenger, Cat Sn Brit Miss in, 1896, p. 47, Wall, J Bombay N H S xxix, 1924, p 868, Werner, Arch. Nature Berlin, 1934, p 115

Maxillary teeth 8 to 12, anterior longest, gradually decreasing in size posteriorly, and followed by a pair of enlarged, grooved fangs, estuated just behind the level of the posterior margin of the eye , head very distinct from neck ; eye rather large with vertical pupil Body cylindrical or slightly com pressed, scales smooth, oblique, with apical pits, in 19 to 23 rows, ventrals rounded; tail moderate; subcaudals paired. Hypapophyses absent on the posterior dorsal vertebra

Range S.E. Furope, S.W. Asia, Tropical and N.E. Africa

Seven species are known, one enters the Indian region.

274 Tarbophis rhinopoma

Dipece rhetopoma Blanford, 1874, Ann. Mag Nat Hart (4) xiv, p. 34 (Karman, S. Pereia, London & Calcutta), and Zool.

Head much depressed; maxillary teeth 8+2; nostril m a large, partially divided nasal, internasals as broad as long, much narrowed anteriorly, much smaller than the prefrontals; frontal as broad as long; loreal elongate, touching the eye, a preocular above it, in contact with the frontal, 2 postoculars, 9 or 10 supralabals, 3rd, 4th and 5th, or 4th, 5th and 6th touching the eye, temporals small, scale-like, 2+3 or 3+4; posterior genials much smaller than the anterior, separated from one another hy small scales Scales

in 23:23 (or 22 or 24):17 rows. V. 266-280; C. 77-84 (99

Wall); A. 1.

Hemipenis extending to the 9th caudal plate, not forked; the anterior is is calyculate, the cups being deeply scalloped, and longer than broad: the remainder of the organ is spinose, the spines, except at the tip, being enclosed in a triangular sheath; there are 18 in longitudinal series.

Pale greyish above, with a vertebral series of large, dark brown, squarish spots, much broader than their interspaces, and a series of alternating, smaller, less clearly defined spots on the sides of the body; posteriorly the vertebral spots may



Fig. 113.—Maxilla of Tarbophis rhinopoma.

divide into two series; belly dark brown. Head with small

dark spots; labials dark-edged; throat white.

Blanford's description of the coloration of the type, a fully grown specimen, when alive, is as follows:-" Pale sandy brown, with numerous, irregular, pale, waved transverse bands, much narrower than their intervening dark spaces, and more distinct near the head than farther back; all the scales more or less minutely puncticulated with black; ventral scales dusky, with sandy mottling. Head sandy above, with minute, irregular, black spots."

Total length: 3 990, tail 160 mm.

Range. Sind; Baluchistan (Kacha Thana; Miranshah; Tochi Valley); Persia.

Genus PSAMMOPHIS.

SAND SNAKES.

Macrosoma (not of Hubner, 1818), Leach, 1819, in Bowdich's

Miss. Ashantee, App. 4, p. 493 (type elegans).

Psammophis Fitzinger, 1826, Noue Class. Rept. pp. 29, 30 (type sibilans); Boulenger, F. B. I. 1890, p. 365, and Cat. Sn. Brit.

Mus. iii, 1836, p. 152, and P. Z. S. 1895, p. 538; Werner, Arch. Nat. Ges. Berlin, A. 12, 1924, p. 138. Taphrometopon Brandt, 1838, Bull. Acad. Sci. St. Petersb. iii, p. 243

(type lineolatus).

Amphiophis Bocage, 1872, J. Sc. Lisbon, iv, p. 81 (type angolemis). Mike Worner, 1924, Sitz. Bor. Akad. Wiss. Wien, Bd. 133, p. 51 (typo elegantissimus=condangrus); Smith, Ann. Mag. Nat. Hist. (10) 1, 1928, p. 495.

Maxillary teeth 10 to 13, one or two in the middle more or less enlarged, fang-like, preceded and (or) followed by an 362

interspace, the last two much enlarged, grooved and directed strongly backwards, situated below the posterior border of the eye anterior mandibulist teeth strongly enlarged. Head distinct from neels with angular cantinus rostralis, eye moderate or large with round pupil; body cylindrical; scales smooth more or less oblique, in 17 rows for all species in the Oriental region ventrals rounded, tail long, sub caudals paired. Hypapophysea absent on the posterior dorsal

Common characters, unless otherwise stated — Sye large, its danneter much preater than list distance from the mouth, nottil between two massls rostral broader than high, visible from above loreal region concave loreal shield clongate, there as long as high, I pre and 2 postcoulars, genals subequal or the anterior pair longer, in contact with one another Scales in IT 71 IS or 13 rows

The distinction between Psammophis and Taphrometopon rests upon the character of the maxillary teeth, through P leith the two are connected

As already observed by Boulenger (Cat. 111, p 152), the skull of Peanmophis is remarkable for the wide vacuity between



118 114 - STREETING OF PARTITIONS INCOME.

the parietal, frontal and sphenoid bones, a condition which approaches that of the Lacertilia; in front the frontal descends to join the sphenoid A similar vacinty occurs in Haplophlura The heads.

The hempens is long and extremely alender, so slender that I have been unable to make a proper extannation of it from the material at mid-gased if his nather spines not eadyes but it provided with ompatible and in the five species east with an that work. Writing of condanaru, Wall [1911, 9] east with an that work Writing of condanarus [1914, 1914, 1915] and the material found peculiar, differing from these organs in other snakes in tent, they were directed domestical presents belief the vent, they were directed domestical presents belief to buck horn. They are thin, long and spirally traveled of forwards. They are thin, long and spirally traveled from the state of the stat

Panmophis teniata Günther, Ann Mag Nat Hist (3) IX, 1802, p. 293, is not sufficiently characterized to be identifiable, and there are no specimens in the British Museum bearing that label. It was said to have come from India

Key to the Species.

I. Anal divided.

A. Frontal distinctly longer than its distance from the end of the snout.

Median maxillary teeth feebly enlarged

b. Anterior end of frontal not twice as broad
as the middle; nasal incompletely di-

schokari, p. 363. lineolatus, p. 367.

condanarus, p. 364.

B. Frontal not longer than its distance from the end of the snout; preocular not in contact with the frontal

longifrons, p. 365.

II. Anal undivided.

Preocular in contact with frontal; 1 anterior temporal

leithi, p. 366.

275. Psammophis schokari *.

Coluber schokari Forskal, 1775, Descr. Anim. p. 14 (Yemen, S. Arabia).—Psammophis schokari, Boulenger, Cat. Sn. Brit. Mus. iii, 1896, p. 157; Wall, J. Bombay N. H. S. xx, 1911, p. 1038 (in part), and xxix, 1924, p. 875; Ingoldby, ibid. xxix, 1923, p. 129.

Psammophis sindanus Stoliczka, 1872, Pr. A.S. Bengal, p. 83

(Katch and Sind).

The above synonymy refers only to specimens from the

Indian Region.

Maxillary teeth 13 or 14, two in the middle very strongly enlarged and preceded and followed by a distinct interval. Internasals \(\frac{1}{2}\)-\frac{1}{3}\) the length of the prefrontals; frontal long and narrow, much longer than its distance from the end of the snout, suddenly enlarging anteriorly where it is twice as broad as in the middle, in contact with the preocular; temporals 2+2; 8 or 9 supralabials, 4th and 5th, or 5th and 6th, touching the eye. V. 164-187; C. 121-134; A. 2 (for specimens from India and the adjacent territory).

Colour very variable: Yellowish, buff or greyish above, with four dark brown longitudinal stripes; the median pair on either side of the vertebral line, the lateral pair on scalerows 1-3; they are bordered on each side with black, or with a series of elongated black spots; head with dark brown symmetrical markings; a dark stripe along the side of the head through the eye; yellowish below with a black line along the outer side of the ventrals, and with or without a median

speckling or a series of paired spots.

The variations occur through loss of colour-pattern, the dark brown stripes disappearing to leave only the black spots

^{*} Loveridge, in a paper on the African species of Psammophis (Bull. Mus. Comp. Zool. Harvard, Ixxxvii, 1940) regards schokari as a race of sibilans.

which edge them or these may also be lost the snake then being of a uniform grey colour above vellowish below

Total length of 1280 tail 460 mm

Range Rajputana (Jodhpur) Punjab (Labore) Kashmir NWF Provinces (Waziristan Tochi Valley) and westwards through Persia and Baluchistan Sind Arabia to North Africa

276 Psammophis condanarus

Colober conductors Morreys, 1829 Tent Syst. Amph p 107 (besed on linesell 1, p 22 pt 27 Ganjlam dat) — Fernenski Reimann (besed on linesell 1, p 22 pt 27 Ganjlam dat) — Fernenski Reimann (besed 1, p 20 pt Leptophus bill Jerdon, 1653 J A B Rengal, xxx, p 529 Günther Rept Ent Ind, 1864 p 291 (Jalna, Hyderabad) Permmophie and cue Beddome, 1863 Madras Quart J Med. Sc.

Vi, p 45 (Kurnool Dist) and J Soc B bl hat, Hist, i 1940 p 310 [repnat]

Maxillary teeth 12 or 13 2 in the middle enlarged with a distinct interval in front hut not always behind upper head shields not protuberant nasal incompletely divided a suture only from the nostral to the lahial unternasals ; as long as the prefrontals or not quite so much frontal long and narrow much longer than its distance from the end of the amout the anterior end not suddenly enlarged not greatly broader there than in the middle not in contact with the preocular tem porals 1+2 8 supralabials 4th and 5th touching the eys

anal divided Pale olive or huff above with 4 or 5 dark brown longitudinal stripes, more or less conspicuously edged with black brown with more or less distinct longitudinal markings the continuation forwards of the stripes upon the body lower parts yellow or yellowish white with a black line along each

side at the outer margin of the ventral shields Total length Q 1075 tail 250 Males are smaller

Two races can be defined -I Psammophis condanarus condanarus

This form has usually 5 dark stripes a vertebral a dorsolateral pair and a lateral pair the vertebral may be absent the dorso lateral pair is upon scale-rows 5 8 and 7 A invenile in the Bombay collection from Berar is brown above with a broad black vertebral stripe occupying 5 scale-rows. V 165-179 C 6 85-93 9 75-85 Range Cutch 8 nd

S nd Punjab Central India (Poons Jaina Kurnal Berar) UP Bihar and Orissa Bengal as

far east as long 86°

II. Psammophis condanarus indochinensis, ssp. nov.

The Indo-Chinese form has 4 stripes only; the vertebral is never present, and the position of the dorso-lateral stripe is upon scale-rows 6,7 and 8. This form also is subject to greater variation in coloration than the Indian one. The median pair of stripes may be united to form a single broad one; or the stripes may be almost absent, the snakes then being almost uniform brown in coloration above. V. 156-173; C. & 75-85; 9.66-75.

Range. Indo-China south of lat. 21° (Tsungyi, Pegu,

Lopburi, Bangkok, Phan-rang in Annam).

It will be noted that the range of the two forms is not conterminous, there being a large area of country through eastern Bengal, Assam and Upper Burma where no specimens

have yet been obtained.

Wall states that it is a common snake in the United Provinces, and in the Western Himalayas at between 3,000-6,000 feet altitude. It appears to be not uncommon in the Pegu district; and there used to be a small colony of them on the outskirts of Bangkok.

In disposition it is shy; it is extremely active in its movements, and is fond of ascending low bushes. Its food consists of small rodents, lizards and frogs. Those that I kept in

captivity refused all food.

277. Psammophis longifrons.

Psammophis longifrons Boulenger, 1896. Cat. Sn. Brit. Mus. iii, p. 165 († Cuddapah Hills, Madras Pres.; London); Dreckmann, J. Bombay N. H. S. vii, 1892, p. 406; Gleadow, ibid. viii, 1894, p. 553; D'Abreu, ibid. xxii, 1913, p. 634; Wall, ibid. xxix, 1924, p. 875.

Maxillary teeth 12 or 13, 2 in the middle very strongly. enlarged, and preceded and followed by a distinct interval; internasals small, ½ or less than ½ the length of the prefrontals; frontal long and narrow, not longer than its distance from the end of the snout, the anterior end not suddenly enlarged, not greatly broader there than in the middle, not in contact with the preocular; temporals 2+2; 8 supralabials, 4th and 5th touching the eye. V. 166-175; C. 79-93; A. 2.

Greyish above in front, browner behind, the scales edged with black, particularly those of the vertebral region; top of head uniform greyish brown, or the scales edged with black;

greyish or yellowish white below.

Total length 1230, tail 375 mm. (fide Dreckmann).

Of considerably stouter build than the other Indian members

of this genus.

Range. Bombay Presidency north of lat. 19° (Thana and Damanganga districts, Bulsar, Panch Mahals); C.P. (Nagpur).

366 COLUBRIDÆ

Known only from a few specimens The type locality, Cud dapab Hills is probably incorrect

i) Abreu records finding ax Semks in the stomach of his

Its habits are both terrestrial and arboreal

278 Psammophis leithi.

Panamophis Irahu (Sinther, 1869, P. Z. S. p. 505, pl. 39 (Sind, London) (Stichtark, P. A. S. Bergal 1872, p. 83; Bouleager F. B. I. 1890 p. 365 (in. part) and Cat. So. Brit. Mus. in. 1895 p. 155. Vall. J. Bombay h. H. S. xrui, 1907, pp. 120 & 202 and zv. 1911 p. 1039, and xxix, 1924 p. 875, Ingoldby, fibd xxix 1923 p. 129.

Maxillary teeth 11 or 12, the median ones feehly enlarged, an edentulous space before or after, sometimes both Posterior

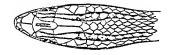




Fig. 115 -- Paramopher leaths (B.M. 91 9 1.5.)

nasal a constitues divided by a longitudinal suture, internasal; 1 to § as long as the prefrontals, frontal long and narrow, runch longer than its distance from the end of the snout, suddenly enlarged anteriorly, where it is nearly twice as broad as in the middle, in contact with the procular, temporals 1+2, 8 supralabads, 4th and 5th touching the eve, 5 infralabads in contact with the anterior genials V d 109-115, 2 [170-185]; C d 8 29-2100, A 1

Light yellowish brown above, with four dark brown longtudinal stripes, the median pair, on either side of the vertebral line, conspicuous and bordered on each side with black spots, which may be continuous with one another; on the head they extend forward as far as the eyes; the outer pair, on scale-rows 1 and 2, are less conspicuous and often absent: they extend forwards on each side of the head to the nostrils; usually a dark median longitudinal stripe on the top of the head; yellowish white below, uniform.

Total length: Q 765, tail 235 mm.

Range. Baluchistan (Munro Khalat); Sind; Cutch; Western India; Bombay Presidency (Poona); Rajputana; U.P. (Fyzabad); Punjab; N.W. Frontier Province (Thal, Kaur Bridge); Kashmir (Chilas).

279. Psammophis lineolatus.

Coluber (Taphrometopon) lineolatus Brandt, 1836, Bull. Acad. Sci. St. Petersb. iii, p. 243 (Transcaspia).—Taphrometopon lineolatum, Boulenger, Cat. Sn. Brit. Mus. iii, 1896, p. 151; Alcock & Finn, J. A. S. Bengal, Ixv, 1896, p. 563; Annandale, ibid. Ixxiii, 1904, p. 210; Nikolsky, Faune de la Russie, 1916, p. 193; Tsarewsky, Ann. Mus. Zool. Leningrad, Xxii, 1917, p. 89; Wall, J. Bombay N. H. S. xxix, 1924, p. 875; Pope, Rept. China, 1935, p. 321, pl. xiv.

Psammophis triticeus Wall, 1912, J. Bombay N. H. S. xxi, p. 634 (Baluchistan).

Maxillary teeth 13 or 14, the median ones feebly enlarged, an edentulous space in front, but not behind. Supraocular shield and canthus rostralis protuberant; internasals as long as the prefrontals; frontal long and narrow, much longer than its distance from the end of the snout, suddenly enlarged anteriorly, where it is nearly twice as broad as in the middle, in contact with the preocular; temporals 2+2; 9 supralabials, 4th to 6th touching the eye. V. 174-186; C. 72-90; A. 2 (for specimens from Baluchistan and Afghanistan).

Light yellowish brown above, with four dark brown longitudinal stripes; the median pair, on scale-rows 5 to 7, conspicuous, and spotted or bordered with black; on the head they extend forward to the eyes: the outer pair, on scale-rows 1 to 3, usually less conspicuous; on the head they extend forward to the nostrils; upper part of head with dark longitudinal markings; below yellowish white, with or without a median stippling, and a linear spot at the outer side of each ventral; chin with dark longitudinal markings.

Total length: 870, tail 190 mm.

Range. Baluchistan (Quetta, Marachak, Chaman, Baleli) and westward through Persia, Afghanistan and Turkestan to the Aral-Caspian region, thence through Mongolia to N.W. China.

Genus PSAMMODYNASTES.

Pearmod mastes Ginther, 1858, Cat Col Sn. Brit Mus p 140 (type Pearmophis pulnerulents Bose): Boulenger, F B. I 1890 p 363 and Cat Sn. Brit Mus in, 1896, p 172 Amsodon Rosen, 1905, Ann. Mag Nat Hist (7) xr, p 176 (type

Isl/jeborys)

Maxillary teeth 10 to 12, 2 or 3 small anterior teeth, followed by 2 much enlarged, fang like ones, then after a small interval 5 small teeth followed by 2 very large grooved fangs , head distinct from neck, with angular canthus rostralis and concave lores, eye rather large, with vertically elliptic pupil, body cylindrical, scales smooth, without pits, in 17 17 15 rows ventrals rounded, tail moderate, subcaudals paired Hypapophyses present on the posterior dorsal vertebræ

Two species are known, one inhabiting Indo China and the Malayan region, the other, P pictus, Borneo and Sumatra



Fig. 116 -A Maxilla and B Palato maxillary arch of Pagmmodynastes pulverulentus

280 Prammodynastes pulverulentus. MOCK VIPER

Paammophus pulcerulenta Bore, 1821, Iars p 547 (Java) -- Paammodinaetes pulcerulentus, Boulenger, F B 1 1890, p 363, and Cat Sa Brit Mus in 1896, p 172, Wall, J Bombay N H. S. come on HITE Mas in 1895, p 172, Wall, J Hombay & H.C. Win, 1907, pp 208 and 330, and xx, 1910, p 72, col. PL, and xx, 1912 p 635 and xxx, 1924, p 875, and xxx, 1925, p 814. Pope, Rept China, 1935, p 326, Bourret, Serp Indochme 1935, p 226, Smith, Pec. Ined. Mus xh., 1940, p 484, Shaw & others, J. M.

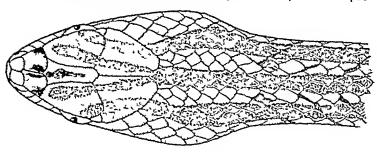
others, J Bengal N H S xvs. 1941, p 57. Dipaus ferragmen Cantor, 1839 P Z S p 53 (Assam , sketch m Bodiesan Library)

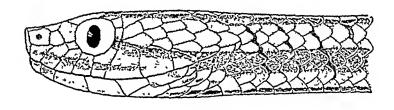
Lycodon boards Steindschner, 1867, Reise Novara., Rept. p 90

(Philippines Vienna)

design illighter, Rosen, 1908, Ann. Mag Nat Hist (7) xv,
p 17s (Java Lund) Snout short, truncate in profile, slightly turned up in the

adult; nostril in a single nasal; rostral a little broader than high; internasals much smaller than the prefrontals; frontal narrow, elongate, more or less bell-shaped, longer than its distance from the end of the snout; loreal about as long as high, sometimes transversely divided; 1 or 2 pre-





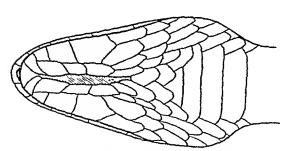


Fig. 117.—Psammodynastcs pulverulentus.

oculars, the upper forming part of the canthus rostralis, widely separated from the frontal; 2 to 4 postoculars; temporals 2+3, rarely 2+2; usually 8 supralabials, 3rd, 4th and 5th touching the eye; 4th infralabial, very large; 3 pairs of genials, the anterior pair broadest. V. 146-175; C. 44-71; A. 1.

Hemipenis extending to the 10th caudal plate forked opposite the 6th at is entirely spinose the spines being nearly uniform in size with the exception of two large thick basel ones on either ade of the sulcus, proximal to the point of forking the spines show no definite arrangement, but opposite and distal to that point they are set in oblique rows that join on a line opposite the sulcus the spines of each row are joined basally by soft tissue, the sulcus is divided some distance proximal to the point of forking and has fairly prominent, smooth line which are almost entirely devoid of spmes throughout (Pope)

Colour very variable Light or dark brown or blackish, reddish, greyish or yellowish above with small black spots or streaks sometimes arranged in pairs, sometimes a series of pink or orange spots on either side of the vertebral line flanks usually with three closely-set longitudinal lines or with yellow spots lower parts thickly powdered with brown or grey and with dark spots or longitudinal lines head with

dark symmetrical markings.

which died in 16 minutes

Total length 2510 tail 90 mm (600 mm. Wall.)

Range The whole of the Indo-Chunese subregion from the Eastern Himalayas as far west as Nepal, to Southern China

Haman, and south to the Malay Archipelago Found in the plains and m the hills. Fairly common in many places in wooded country particularly in hilly districts A placky and victors little snake striking fiercely at anyone who attempts to handle it Frogs and hzards form its mam diet The young are born alive from 3 to 10 being produced at a time Shaw (1941) naw one strike a Natrix submirestin

Genus DRYOPHIS

WHIP SYAKES Drynus (not of Latrello, 1804) Merrem, 1820, Syst Amphib. p. 150

Dyrona 1805 of Latredle, 1804) Herrem, 1820, Syst Ampand, a separation of the property of the Passersto Gray 1825 Ann. Phil. (u.s.) x, p. 208 (subst. name for

Drymus type mycierzone) Tropope Wagier 1830, vat Syst, Amphib p. 184 (type prosents)

Gunther Rept Brit Ind. 1864, p 302.

Herjetotropus Fitzinger 1843 Syst Rept, p 27 (type same) Dystyches Gatel, 1843, Naturg, Therr m (subst. for Tropops) Wagler)

Tropulococcyz Günther 1850, Ann. Mag. Nat Hist 6 (3) p. 428 (type perroteti) Gephyrmas Cope, 1886 Proc Amer Phil Soc. XXIII, p. 492 (1796

frontunitus)
Aherulla, Messo & Hennig Zool, Anz. Leguig reix, 11/12, 1922. p. 296 Stepneger Copers, 1933 p 203

Maxillary teeth 12 to 15 the anterior 6 or 7 gradually

enlarged from before backwards or the last two suddenly enlarged, followed by an interspace, after which the teeth are small; I or 2 posterior grooved fangs, situated below the posterior border of the eye; ectopterygoid more or less distinctly forked anteriorly (fig. 118) the two branches articulating with the maxilla; head elongate, distinct from neck, with strong canthus rostralis and concave lores; eye large, transversely oval, with horizontal pupil; nostril in the posterior part of an elongated nasal; frontal narrow, elongate, more or less bell-shaped. Body very elongate and compressed; scales smooth, in 15:15:13 rows, disposed obliquely, the vertebral row slightly enlarged; ventrals rounded or with an obtuse lateral keel; tail long; subcaudals paired. Hypapophyses absent on the posterior dorsal vertebræ.

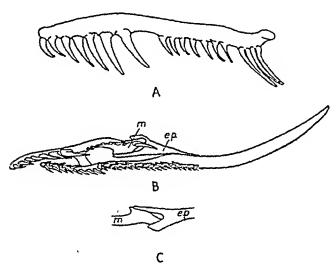


Fig. 118.—A. Maxilla. B. Palato-maxillary arch. C. Articulation of maxilla (m.) and ectopterygoid, (ep.) of Dryophis nasutus.

The following account of the hemipenis will serve for all the species. The organ is short and is not forked; the distal end is calyculate, the cups having scalloped edges; this area merges gradually into a spinose one, at the end of which there are a few enormous spines; proximal to the spines, there are longitudinal folds.

Range. The Oriental Region; Celebes and the Philippines.

Of the 8 species known, 7 are included in this work.

A genus of Tree-Snakes, living chiefly on bushes and shrubs, through which they can move with ease and great rapidity; in search of food, they often descend to the ground. As far as is known, all of them produce living young.

2 B 2

The absence of a strongly marked lateral ventral keel in a genus which is essentially arboreal in its habits, is unusual It is noteworthy also that in many of the species, although







Fig. 119 - Dryophie namine

no keel or almost no keel in evident, its position is indicated by a white line

Key to the Species

I Shout without dermal appendage, projecting feebly beyond the lower jaw A Snort not twice as long as the eye, pre

frontale not twice as long as broad. No loreal , 1 postocular , C. 65-86

1 or 2 loreals, 2 postoculars; 1 or 2 prosuboculars , C, 84-119 B Snout at least twice as long as the eye ; pre-

frontals at least twice as long as broad. Needs usually in contact with one another above

the rostral, 3rd and 4th labials hormontally divided, C 115-143 Supralabiala entire ; V. 194-235 , C 151-187 ;

Supralabials entire; V 186-195, C 136-156,

II. Shout ending in a pointed, dermal appeardage, usually extending far beyond the Dermal appendage formed usually only of the

rostral , colour green Dennal appendage covered with small scales; grey or brown with black spote

dupor, p 373

promous, p 375

mycierazona, p. 376.

pulperulentus, p 378.

281. Dryophis perroteti.

Psammophis perroteti Dum. & Bib. 1854, Erp. Gen. vii, p. 899 ('Indes Orientales'; Paris).—Dryophis perroteti, Boulenger, F. B. I. 1890, p. 868, and Cat. Sn. Brit. Mus. 1896, iii, p. 178; Wall, J. Bombay N. H. S. xvii, 1906, p. 7, fig., and xxvi, 1919, p. 571, and xxix, 1924, p. 876. Leptophis? canarensis? Jerdon, 1853, J. A. S. Bengal, xxii,

p. 530 (North Canara).

Snout obtusely acuminate, without dorsal appendage, not twice as long as the eye; no loreal, the internasals and prefrontals touching the labials; 1 preocular, in contact with the frontal; 1 postocular; temporals 1+2 or 2+2; 8, rarely 9, supralabials, 4th and 5th touching the eye, 4th sometimes horizontally divided; anterior pair of genials as long as the posterior. Scales on the sacral region keeled, strongly in the male, feebly in the female. V. 136-146; C. 3 65-75; Q 71-86; A. 2.

Bright green above, the interstitial skin black and white forming oblique lines, sometimes all black; yellowish white or pale greenish below; a white line along the outer edge of the ventrals, edged inside with green; top of head often bronze, lips paler. A specimen from the Nilgiris is olive-brown

above.

Total length: 2 545, tail 135 mm. (590, Wall.)

Range. The Western Ghats (Nilgiri Hills, North Canara).

Common in the Nilgiris at about 5,000 feet altitude.

Wall (1919) records 9 gravid females taken in the Nilgiris between July and the beginning of September. Their eggs numbered from 2 to 10, and the embryo in some was partly developed.

282. Dryophis dispar.

Tragops dispar Günther, 1864, Rept. Brit. Ind. p. 303, pl. 23, fig. A (Anamalai Hills; London).—Dryophis dispar, Boulenger, F. B. I. 1890, p. 368, and Cat. Sn. Brit. Mus. iii, 1896, p. 179; F. B. I. 1890, p. 368, and Cat. Sn. Brit. Mus. iii, 1896, p. 194; Wall, ibid. Fisher, J. Bombay N. H. S. xxiv, 1915, p. 194; Wall, ibid. xvii, 1906, p. 7, fig., and xxix, 1924, p. 877.

Snout acuminate, without dermal appendage, not twice as long as the eye; internasals, and sometimes the prefrontals, touching the labials; 1 or 2 small loreals, rarely absent altogether; 1 preocular, in contact with the frontal; 2 postoculars; 8 supralabials, 4th divided, forming 1 or 2 presuboculars, 5th touching the eye; temporals 2+2 or 2+3; anterior genials as long as, or a little shorter, than the posterior. Scales on the sacral region smooth, or feebly keeled. V. 136-

Bright green or bronzy olive above, the interstitial skin 156; C. 84-119; A. 2. black and white forming oblique lines, sometimes all black; outer margin of the ventrals

Total length 2 725, tail 240 mm Range The Western Ghats (Nilguri Hills to Travancore) Fisher's specimen was secured in the Anaimalai Hills at 8,000 feet altitude It contained four fully formed young

283 Dryophis fronticinetus.

374

Dryophie frontumetus Gunther, 1858, Cat Col. Sn Brit Mus. p 197, Theobald, Cat Rept Bris 2nd 1876, p 192

Snout acuminate, without dermal appendage, 2 to 21 times as long as the eye , nasals usually in contact with one another in front of the internasals, nasals and prefrontals separated from the labials by two loreals, I preocular, touching or just separated from the prefrontal , 2 postoculars, rarely only 1, temporals 2+2 or 3+3, normally 7 supralabials, 1st and 2nd enters, 3rd and 4th subject to both horizontal and vertical division, 5th below the eye; anterior genials much shorter than the posterior, or the latter divided, forming three pairs in all Scales of the sacral region keeled, more strongly in the male than in the female V 168-196, C & 139-148;

2 115-136 , A 2 Bright green, olive or bronze brown above, the interstitual skin black and white forming oblique lines, pale green or olive below, a white streak along the outer edge of the venirals often margined maids with black, top of head with or without black dots

Total length \$ 980, tail 310 mm

Range Lower Burma (Watiya, Rangoon and Pegu districts) Wall records a specimen from Assam (Sibsagar) and another from Darreeling

"Abundant on the bushes which france the banks of many of the tidal rivers of Lower Burma; when attacked, they

invariably take refuge in the water " (Stoliczka)

Wall (1924) comments on its currous distribution as follows "It is significant that the Burness species which Stoliczka (1870) reports a true brackish water species common about the mouth of the Moulmein River, and Theobald (1876) reports by no means scarce in the mangrove swamps on the Arakan coast, should not have been recorded anywhere in Burma except at the mouths of rivers, and should again be found far Inland in Assam, and in the Darjeeling District"

284. Dryophis prasinus.

Coluber nasutus (not of Lacepede) Russell, 1801, Ind. Serp. ii,

p. 28, pl. 24 (Java) *.

Dryophis prasinus Bois, 1827, Isis, p. 545 (Java); Boulenger, F. B. I. 1890, p. 369, and Cat. Sn. Brit. Mus. iii, 1896, p. 180; Wall, J. Bombay N. H. S. xvii, 1906, p. 7, fig. head, and xix, 1909–1910, pp. 353 and 834, and xxix, 1924, p. 877; Smith, J. Nat. Hist. Soc. Siam, iv, 1920, p. 97, and Rec. Ind. Mus. xlii, 1940, p. 484; Bourret, Serp. Indochine, 1936, p. 330, and Bull. Instr. Pub. Hanoi. 1939, p. 28; Shaw and others, J. Bengal N. H. S. xvi, 1941, p. 62.—Ahætulla prasina, Stejneger, Copeia, 1933, p. 203; Pope, Rept. China, 1935, p. 322, pl. xiii.
Dryophis prasinus flavescens Smith, 1915, J. Bombay N. H. S.

xxiii, p. 785 (Trang Pen. Siam).

Dryophis prasinus indicus and chinensis Mell, Sitz. Ber. Ges. Nat. Fr. Berlin, 1930, p. 323.

Snout acuminate, without dermal appendage, 2 to 21 times as long as the eye; nasals in contact with the labials; prefrontals separated from them by 2 or 3 loreals; I preocular, in contact with the frontal; 2 postoculars; temporals usually 2+2 or 2+3; 9 supralabials, all entire, 4th, 5th and 6th touching the eye; anterior genials much shorter than the posterior. Scales of the sacral region strongly keeled in the male, the keel often broken into tubercles and pigmented with black. V. 194-235; C. & 165-187; Q 151-172; A. 2, rarely 1 (for specimens from the Indo-Chinese region).



Fig. 120.—Dryophis prasinus. (B.M. 97 6.21.59.)

Green, grey, yellow, buff or cream above, the interstitial skin black and white, forming oblique lines; paler below; a white or yellow line along the outer margin of the ventrals, usually absent in specimens of pale coloration.

Total length: 3 1580, tail 525; Q 1970, tail 670 mm. (both from Pulo Condore, South China Sea). Specimens from

the mainland of Asia are somewhat smaller.

Range. From Bengal (Jalpaiguri district) and the Eastern Himalayas (Sikkim) throughout the whole of the Indo Chinese region as far north as the Triangle in Upper Burma, to the Malay Pensinsula and the Indo-Australian Archipelago; Pulo Condore off the coast of Cochin China.

^{*} Russell, on p. 28, quotes Shaw, despite the fact that Shaw's work is dated 1802.

Common throughout the Indo Chinese region, both in the hills at low allitudes and in the plains. Although I obtained it from nearly all parts of Siam, I never saw a specimen from Bangkok, where it was replaced by nasutus

A very gentle snake, quite unafraid, and easily handled Like nasutus it has the habit of putting its tongue out and

keep.ng it out, almost motionless, for a considerable time. I obtained a female in S.E. Siam on July 1st containing 6 young almost ready for expulsion. Their average length was 240 mm.

285 Dryophis myeterizans,

Coluber mysterizans Innn. 1758, Syst Nat., ed. 10, p 226 (America), Andersson, Bih Swen, Vet. Akad. Stockholm, XXIV 1898, 4, 6, p 14

Dripohis zamidosonia Bose, 1827, Isis, p. 545 (Java); Bonlenger, Cat. 8o. Brit. Mus. us. 1896, p. 180, and Rept. Malay Fen. 1912 p. 175.—Passerida zamidozomia, Emith, Bull. Raffies Mus. ho. 3, 1930. p. 66

Like fractions but with the anal entire, fewer ventrals,

186-195, and fewer subcaudals, 132-156 Green or greyish above, the interstitial skin black and

white whitish below, a white line along the outer margin of the ventrals heavily edged inside with green or grey, sometimes also a median ventral line of the same colour, throat white

Total length Q 1080, tail 410 mm I have not seen a male Range A Malayan species that just enters the Indo Chinese region Robinson and Kloss obtained a specimen at Trang (Isthmus of Kra)

For the change in name see D nasulus

286 Dryophis nasutus.

COMMON GREEN WRIP SNAKE

Coluber measure Lacetybele, 1769, Hint Nat Serp i, p 100, and i, p 277 pl 4, 6g 2 (Ceylon, Gunne, Carcina),—Dropchis nature Andersson, Bih Stren, Vet Akad, Stockholm, xxiv. 1839 4 6 p 15 — Faustrals natural, Cochran, 270 U.S. Nat Mus Exvii 1830 11, p 32 — Ahartulla natura, Stoppess. Copess, 1933, p 203

Dryinus oxyrhynchus Bell, 1825, Zool. J. ii, p. 326 (India).

Dryinus russellianus Bell, l.c.s. p. 327 (based on Russell's pl. xiii).

Dryophis mycterizans anomalus Annandale, 1906, Mem. A.S.

Bengal, i, p. 196 (Ramanad, S. India).

Dryophis mycterizans tephrogaster Wall, 1908, J. Bombay N. H. S. xviii, p. 783, and zephrogaster, ibid. xx, 1909, p. 229 (Burma).—
D. m. cinereoventer in vol. xviii, p. 919, is a slip for tephrogaster, see vol. xix, p. 269.

Dryophis myclerizans rhodogaster Wall, 1908, J. Bombay N. H. S.

xviii, p. 919 (Schwebo, Upper Burma).

Dryophis mycterizans lepidorostralis Wall, 1910, J. Bombay N. H. S. xx, p. 229 (Bengal) = D. m. anomalus, Wall, J. Bombay N. H. S. xx, 1910, p. 524.

Dryophis mycterizans isabellinus Wall, 1910, J. Bombay N. H. S.

xx, p. 230 (Paralai near Valpari, Anamallai Hills).

Dryophis mycterizans rhodonotus Wall, 1921, Sn. Čeylon, p. 293 (Galatura Estate, Ceylon).

Snout acuminate, terminating in a pointed dermal appendage, variable in length, shorter than the eye; it has a median groove above, and is formed usually entirely by the rostral, rarely with small scales at the base; length of the snout without the dermal appendage $2\frac{1}{2}$ to 3 times that of the eye; no loreal, the internasals and prefrontals in contact with the labials; 1 large preocular, in contact with the frontal; 2 postoculars; temporals 1+2 or 2+2; normally 8 supralabials, 3rd and 4th, or one only, divided to form 1 or 2 presuboculars, 5th touching the eye, anterior pair of genials shorter than the posterior. V. 166-207; C. $5 \cdot 156-180$, $2 \cdot 135-152$; A. 2.

Verdant green above, the interstitial skin black and white, forming oblique lines, best marked on the anterior half of the body; pale green below; a white or yellow line along the outer margin of the ventrals; lips sometimes yellowish;

throat white, sometimes bluish in life.

This form of coloration is by far the most common, but there are many departures from it. Occasional individuals are yellowish, brown or buff above (isabellinus); the belly may be leaden-grey in colour (tephrogaster) or rose coloured (rhodogaster), or the whole snake may be coloured with shades of pink (rhodonotus).

Total length: of 1325, tail 530; Q 1940, tail 720 mm.

Range. Ceylon; Peninsular India, excluding the Ganges Valley west of Patna, B. & O. (fide Wall); Bengal; the Indo-Chinese region as far south as Rangoon in Burma; Siam; Cambodia; Cochin-China. It has not been met with in the north-eastern plateau-land of Siam or in other parts of French Indo-China.

Wall (1905 and 1921) has given excellent accounts of the habits of this snake. Like prasinus it is quite fearless and may be handled without difficulty. In my garden in Bangkok, where it was common, I often caught it and placed it among

the flowers on the table whilst we had a meal there it would remain almost motionless turning its head from side to ade and watching us but seldom attempting to escape. When handled it has a peculiar habit of watching one s face and suddenly making a dart at it aiming usually for the eyes Its food cons ste chiefly of lizards small rodents and birds but it has been known to eat anakes McCann (1934) records a lizard (Caloles) being serzed by one and held struggling until it was dead 25 minutes later before being swallowed. Wall quoting Creen in his Snakes of Cevion 'p 296 records the same hab t and concludes the snake never commences to swallow its preventil all signs of life have ceased 3 to 22 young are born at a time and this may occur during any month between March and December

It is unfortunate that the well known name myderiums must be transferred to another species but as shown by Anderson (1898) the snake which commonly bears this name is really Bo e s xuntheronea

287 Dryophis pulverulentus

BROWN WHIP SYAKE

1940 p 200 Passerita purpuruscens Günther 1854, Rept Brit Ind. P 308

pl. 23 F (Caylon : London)

Like nasutus differing as follows - Dermal appendage longer somet mes longer than the eye formed below by the toetral covered above by small scales no median groots above nasals often in contact with one another in front of the internasals V 179-193 C 151 178 (Ceylon) V 182 203 C 169-208 (S India) A 2

Greyish or brownish powdered with brown, and with blackish transverse or oblique spots above a dark brown rhombondal spot on the top of the head and a brown stripe on each side passing through the eye

Total length & 1125 tail 470 Q 1730 tail 710 mm.
Range The Western Chats (Karwar N Kanara Admin) Castle Rock Nellampatty Hills Travancore) Ceylon Found in the planes and in the hills up to 3 000 feet

Subfamily HOMALOPSINÆ.

FRESHWATER SNAKES.

Homalopsidæ, Günther, 1864, Rept. Brit. Ind. p. 275.—Homalopsinæ, Boulenger, F. B. I. 1890, p. 372, and Cat. Sn. Brit. Mus. iii, 1896, p. 1; Werner, Arch. Naturg. Berlin, lxxxix, 1923, 8, p. 158; Smith, P. Z. S. 1931, p. 398.

Dentition well developed, the last two, sometimes three, maxillary teeth grooved and usually enlarged. Nostril crescentic, on the upper surface of the snout; eye small, directed more or less upwards; head shields often broken up; ventrals moderately well developed or narrow. Body usually stout; tail moderate or short. Hypapophyses developed throughout the vertebral column.

Thoroughly aquatic snakes, but often found on land in the vicinity of water; all of them appear to be equally at home both in fresh and salt water. They feed chiefly on fish, which are often swallowed under water. They bring forth

living young.

In accordance with their aquatic habits and the need for complete closure of the mouth, the rostral shield is never deeply excavated, as in most of the Colubrina. It is provided, in addition, with a more or less distinct downward-projecting tongue of tissue, the structure being best developed in those species that live an entirely aquatic existence (Smith, 1931). The closure of the nostril is discussed on p. 17.

The hemipenis, except for small variations in detail, does not differ throughout the subfamily, and the following

description will serve for all.

The organ is short and is forked for about half its length; the distal end is finely calyculate, the lips of the cups being low and stiffened with small, blunt spines that may or may not project beyond the edges. This condition merges gradually into a median area where the calyces and spines are larger. Near or at the bifurcation there is a more or less abrupt transition to an area that is beset with large flat triangular papilla-like processes arranged in longitudinal series, each one ending in a small spine.

Range. From S.E. Asia (India to China) through the Indo-Australian Archipelago to the north coast of Australia. Of the ten genera known seven are monotypic and only Enhydris has more than two species. Eight of the genera inhabit the area covered by this work, the remaining two, Myron and Heurnia, occurring in Australia and New Guinea respectively. The distribution of the Homalopsine accords

closely with that of the Sea Snakes (Hydrophiidæ).

Key to the Genera.

I Ventrals moderately well developed, not Ironiari

A basal shields in contact with one another Parietals well developed scales smooth Parietals distinct, scales strongly keeled . Parietals more or less broken up , scales keeled

ENHYDRIS, p 380 HOMALOPSIS, p 390, CERRENUS, p 392.

B Nasals separated by the internasal. Scales in 17 rows body not elongate Scales in 25-29 rows body not elongate GERARDIA, p. 394. FORDONIA, p 398

Scales in 19 rows , body very elongate II. Ventrals parrow bicarmate

CANTONIA, p. 397

Scales smooth

Berta, p 399 HERFERON, p 400

Genus ENHYDRIS.

Enhydrus Sonn. & Late 1802, Hist Nat Rept iv, p 200 (type carules - enhydrus) Hyperhina Wegler 1830, Syst Amphib pp 132, 169 (type Homelopne aer Bojel

Potomophia Cantor 1836, Tr Med. Phys Soc. Calcutta, val. p 139 (type lunngtonss)

P. P. 139 (type latengium).

Remain Gry 1841, Zooj Mase p 57 (type elebelds).

Remain Gry 1841, Zooj Mase p 57 (type elebelds).

Hirada Gry, be est p 57 (type elebelds).

Hirada Gry, be est p 58 (type elebelds).

Fleight Finneys, loc est p 25 (type elemenn).

Fleight Finneys, loc est p 25 (type elemenn).

Fleight Finneys, loc est p 25 (type elemenn).

Fleight Gry 1840, Cut Sin. Brit Man p 57 (type posidist).

Eurottis Grot 1840, Cut Sin. Brit Man p 57 (type posidist).

Eurottis Grot 1840, Cut Sin. Brit Man p 57 (type posidist).

Zivan to 60 (1840, Cut Sin. Brit Man p 57 (type posidist).

XVIII p 498 (type dussumsers) Trigonorus Dumeni, joe cat p 498 (type meloidat) Tachiplotus Runhardt, 1866, Vidensk Moddel p 161 (type

hademanns = punctata) Ferancodes Carlleyle, 1869, 3 A. S Bengal, xxxviii pp 192, 196

(type james ricus) Pythonopess Peters, 1871, Mon. Akad Berlin, p 576 (type bornecess

e-punctata) Homalophie Peters loc cit. p 517 (type dories) Pseudoferania Ogifby, 1890, Proc Lann. Boc. N.B Wales (2) v,

p 51 (type macleays)

Dicurostus Berg, 1901, Cum, Mus Nac Buenos Aires, p 290 (subst name for Euroster)

Maxillary teeth 10 to 16, followed by a pair of slightly enlarged grooved fangs, eye small with vertical pupil Head scarcely distinct from neck, with large shields, nasals in contact with one another, the internasal behind them; loreal present Head depressed, body cylindrical, scales smooth, in 19 to 33 rows Tail moderate, subcaudals paired. Common characters unless otherwise stated -A suture

from the nostril to the labesl or the loreal, mternasal broader than long, 1 pre- and 2 postoculars, temporals 1+2, posterior pair of genials separated by scales; anal divided.

Range. The Oriental Region; Southern China to Formosa; the Indo-Australian archipelago; N. Queensland. Some 16

species are known.

The "Hurriah" of Russell (Ind. Serp. i. 1796, p. 45, pl. 40), which was made by Daudin the type of Hurria bilineata (Mag. Encycl. An. 8, v. 1803, p. 434), has been generally referred to Enhydris enhydris, and it certainly resembles it closely in coloration and general configuration. It was described by Russell from a sketch of a head, neck and tail,

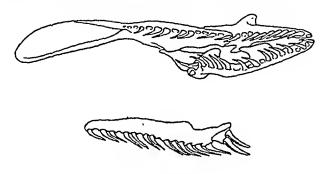


Fig. 121.—Maxilla and palato-maxillary arch of Enhydris enhydris.

and a description sent him by a correspondent, but was said to have the anterior subcaudal plates single, a character so far unknown in *Enhudris*.

30 Int high in printger ic.	
Key to the Species. A. Scales in 19 rows B. Scales in 21-23 rows (rarely 25 in chinensis).	plumbea, p. 382.
I. Loreal in contact with the internasal. Scales in 21 rows; V. 116-145 Scales in 21 (23 rows); V. 141-174	jagorii, p. 384. enhydris, p. 383.
Scales in 21 or 23 rows; V. 105-115; sides with black vertical bars	innominata, p. 385.
Scales in 21 rows; V. 118-121; black with light cross-bars or annuli	smithi, p. 385.
Scales in 23 (21) rows; 2 internasals; V. 129-137; C. 61-74	longicauda, p. 386.
II. Loreal not reaching the internasal. Scales in 21 rows; V. 158-169; C. 47-53	bennetti, p. 386.
Scales in 23 (rarely 25) rows. V. 136-154; C. 36-52	chinensis, p. 387.
C. Scales in 25-31 rows. Scales in 25 rows; loreal not in contact with the internasal; V. 120-130	maculosa, p. 387.
Scales in 27 rows; loreal in contact with the internasal; V. 124-136	bocourti, p. 388. dussumieri, p. 389. sieboldi, p. 389.

288 Enhydris piumbes

Homolopeus piumbos Bote 1827 Ises p 560 (Java; Leiden) Schlegel Phys Serp u, 1837 p 345 pl. xm, figs 12 & 13 — Hyperbins plumbos Gunther Rept Brit Ind. 1864, p. 280 Boulenger F B I 1890 p 376 fig and Cat Sn. Brit Mus un, 1898 p 5 and Rept. Malay Pen, 1912, p. 160; Wall, J Bombey N H. S mrs. 1924 p 866—Enhydrus plumber Pope Rept China, 1935 p 315, fig Bourret, Berp Indochine 1936 p 276

Hyperchina hardenehu Gray 1834, III. Ind. Zool, h, pl. 67 fig 1 (Penang London)

Snout broadly rounded internasal single, not touching the loreal, which is about as long as high, frontal broader than

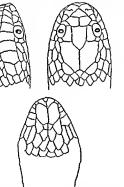


Fig 122 -Enhydrus plumbes (After Boulonger F B I, 1890)

the supraoculars 8 supralabials, 4th touching the eye 6th and 7th largest, anterior pair of gentals not or scarcely longer than the posterior pair, in contact with 4-5 labials Body moderately stout scales in 19 rows V 120-136 C. 29-45 Olive or greenish above uniform or with a series of small black spots usually on the vertebral line , outer 2-3 scale-rows yellowish, uniform in the young, margined with grey in the adult; lower parts yellow or whitish, with or without a ventral series of dark spots; tail with a median black line or series of dots.

Total length: 2 380, tail 50 mm.

Range. Burma as far north as lat. 22°; Siam; French Indo-China; Hainan; southern China to Formosa; Hong

Kong; the Malay Peninsula and Archipelago.

Enhydris plumbea is not uncommon in Siam, but is more often met with in the vicinity of streams in hilly districts I obtained a specimen at Bockor, in than near the coast. the Elephant Mts., Cambodia, at 3,000 feet altitude; another was caught in the fishing-nets at Koh Lak in the Gulf of Siam.

It feeds on frogs and fish. It is extremely active in its movements and bites readily when caught, and in these respects differs from most of the other members of the genus

that I have met with.

289. Enhydris enhydris.

Russell, 1796, Ind. Serp. i, p. 35, pl. xxx (Ankapilly Lake).

Hydrus enhydris Schneider, 1799, Hist. Amph. i, p. 245 ("Indiae orientalis").—Hypsirhina enhydris, Günther, Rept. Brit. Ind. 1864, p. 281, pl. xxii, fig. K; Jan, Icon. Gén., Liv. 30, 1868, pl. iii, fig. 2 & pl. v, fig. 1; Theobald, Cat. Rept. Brit. Ind. 1876, p. 183; Boulenger, F. B. I. 1890, p. 376, and Cat. Sn. Brit. Mus. iii, 1896, p. 6; Wall & Evans, J. Bombay, N. H. S. xiii, 1900, p. 348, and 1901, p. 616; Wall, ibid xix, 1910, p. 831, and xxi, 1912, p. 1017, col. pl. & map, and xxix, 1924, p. 866, and xxx, 1925, p. 817; D'Abreu, ibid. xxii, p. 203; Smith, J. Nat. Hist. Soc. Siam, i, 1914, p. 127; Bourret, Serp. Indochine, 1936, p. 280.—Enhydris enhydris, Pope, Rept. China, 1935, p. 314, pl. xiii, figs. D-I; Shaw & Shebbeare, J. Darjeeling N. H. S. iv, 1929, p. 54.

Hydrus atrocuruleus Shaw, 1802 Gen. Zool. Amphib. iii, p. 567

Hydrus atrocuruleus Shaw, 1802 Gen. Zool. Amphib. iii, p. 567

(based on Russell's "Mutta Pam")

Enhydris carulea Sonn. & Latr. 1802, Hist. Nat. Rept. iv, p. 202 (based on Russell's "Mutta Pam").

Coluber pythonissa Daudin, 1803, Hist. Nat. Rept. vii, p. 107.

Homalopsis aer Boie, 1826, Isis, p. 214, and 1827, p. 560.

Potamophis lusingtoni; Cantor, 1836, Pr. Mod. Phys. Soc. Calcutta, viii a 130 (India)

viii, p. 139 (India).

Homalopsis olivaceus Cantor, 1839, P. Z. S. p. 55 (Bengal; col,

sketch in Bodleian Lib.). Hypsirhina trilineata Gray, 1842, Zool. Misc. p. 66 (India;

London). Hypsirhina furcata Gray, ibid. p. 66 (type loc. unknown; London).

Hypsirhina bilineata Gray, ibid. p. 66 (China: London). Eurostus dussumieri Dum. & Bibr. 1854, Erp. Gen. vii, p. 953

(Bengal; Paris), Atlas, pl. 84. Helicops indicus Annandale, 1905, J. A. Soc. Bengal, i (n.s.),

p. 211, and corrigenda (Bengal). Hypsirhina albolineata, Morice, 1875, Fauna Cochinchine, p. 58 (appears to be a nom. nud.: specimen in Lyons).

Snout broadly rounded; internasal single, twice as broad as long, in contact with the loreal: frontal broader than the supraocular loreal subquadrangular in shape, 8 supralabals 4th touching the eve last very small, anterior pair of genula smaller than the posterior pair, in contact with 4 labals. Body stout scales in 21 (rarely 23) rows V 141-174 C 46-70

There are two colour forms -

I Brownsh graysh or obvaceous above with a dark ertebral stripe occupring from 4-8 scale rows, and bounded on either side by a pale stripe, most distinct on the hinder part of the body outer 3 scale rows whitish yellows for red, the colours sometimes alternating ventrals yellow or whitah margined laterally with brown and usually with a median series of brown prote, head brown above, indistinctly vanegated with grev or with an indistinct dark stripe on each side through the eve — Jureniles have three light lines down the back a vertebral and two lateral, in the adult the vertebral line is usually lock.

II Brown above with three series of indistinct dark spots, a vertebral and two lateral extending down the whole length of the back and tail. In coloration this form closely resembles

that of sogors

Total length of 645, tail 145, 2 810, tail 150 mm
Range A.E. India (United Provinces Vizagapatam district,
Bihar and Orissa Bengal as far north as the Himilayan
foothills) Assam Burma, Siam, French Indo-Chims.

8 China the Malay Peninsula and Archipelago

Farly common in ponds, irrigated fields, and sluggish waters in Southern Burma. Siam and Cochin China

It feeds principally on fish, but one sent to me in Banckok disported a senk. In disposition it is quiet, and never attempts to bite when bandled. From 6-18 young are produced at a tree.

290 Enhydris jagorii.

Hyperrina (Eurostus) paperu Peters, 1863, Mon. Akad. Berlin, p. 245 (Siam, Berlin).—Hyperrina paperu, Günther, Reyt. Brit Ind. 1854, p. 232, Tirant, Rept. Batr. Oochmehme Sh. p. 1 Boulenger Cat. Sn. Brit. Min. m., 1896, p. 6, Flower

p. 1 Bonlenger Cat En. Brit. 31ma. 42, 2007., F Z S 1599 § 5"8

Hyperham enhydrer sudderneada Bourret, 1934, Bull. Gen. In struct. Fub. Hason, March, p. 9 (See Trang. Cochmehama. Parat, and Kasen, Indonésia. 1935, p. 25

Shout blunt, squarsh, intermand angle, twice as broad as long, in contact with the loreal, which is clongate, frontal broader than the supraocular, antenor pair of genuls larger than the posterior pair, in contact with 4 labials. Body

stout, scales in 21 rows, V 116-145, C. 33-61 repush or obvaccons above with more or less distinct blackish spots, usually arranged in pairs on the vertebral line, and with a series of larger angular or flower-shaped ones on

the flanks; sometimes an indistinct light dorso-lateral stripe; ventrals and outer 3 or 4 scale-rows yellow, pink, or whitish the outer margins of the ventrals and adjacent scale-rows heavily margined with grey; sometimes a dark median ventral line or series of spots; head grey above, speckled with darker.

Total length: 2 560, tail 90 mm.*

Range. The plain of Central Siam (Bangkok, Korat); Cochin-China; Laos; Kontum in Annam, lat. 16° 30' N.

291. Enhydris innominata.

Hypsirhina innominata Mories, 1875, Coup d'œil Faune Cochinchine, p. 58 (Tay-ninh, Cochinchina; Lyon).—Enhydris innominata, Smith, J. Nat. Hist. Soc. Siam, viii, 1929, p. 49.

Internasal single, twice as broad as long, in contact with the loreal; frontal broader than the supraocular; loreal a little longer than high; 8 supralabials, 4th touching the eye, last horizontally divided; anterior pair of genials much larger than the posterior pair, in contact with 5 labials. Scales in 21 or 23 rows. V. 105-115; C. 40-51.

Greyish-brown above with small black spots arranged in three fairly regular longitudinal series; flanks and helly yellowish-white, with broad, closely set black vertical bars which extend on to the outer margins of the ventral shields; tail below and

on the sides alternately banded with black and white.

Total length: Q 175, tail 72 mm.

Range. Cochin China. The type, a Q, has 23 scales round the body. Five other specimens in the Paris Museum have 21 scales round the body.

292. Enhydris smithi.

VOL. III.

Hypsirhina smithi Boulenger, 1914, J. Nat. Hist. Soc. Siam. i, p. 69 (Bangkok; London).—Enhydris smithi, Smith, ibid. viii, 1929, p. 50.

Snout blunt, squarish; internasal single, much broader than long, in contact with the loreal, which is about as broad as high; frontal not much broader than the supraocular; 8 supralabials, 4th touching the eye; anterior pair of genials much longer than the posterior pair, in contact with 4-5 labials. Body very stout; scales in 21 rows. V. 118-127; C. 54-56.

Black above, paler below, with narrow, more or less complete annuli which are pinkish above, yellowish below; on the anterior part of the back these are linked together to form festoons; head black with indistinct markings.

Total length: 9 680, tail 130 mm.

Range. Siam. I know of 4 specimens. Two were obtained

^{*} This is the specimen recorded by Flower measuring 635 mm, in length when fresh.

in the river at Bangkok, a third on the ses-coast of Hus Him in the Gulf of Siam , all are adult females There is a juvenile in the Natural History Museum of Paris labelled "Biam"

This handsome make is closely related to innominate and

may prove to be only a race of that species

293 Enhydris longleauda.

Hyperhina longeousla Bourret, 1934, Bull. Instr Pub. Gen. Hanos, Sept p 20 (Cambodia; Paris), and Sorp. Indochine, 1936 p 284 tg head

Snout bluntly squared; a pair of internasals in contact with the lorenly, frontal broader than the supraccular; loreal longer than high, or divided into two by a vertical suture, 8 or 9 supralabials, 4th, or 4th and 5th, touching the eye; anterior pair of genials much larger than the posterior, in contact with & faluals Body stout . scales in (21) 23 rows.

¥ 129-137. € 61-74

Adult -Greynh brown above, many of the scales white, margined with brown , a vertebral series of large, dark brown pots and two indistinct dark dorso lateral stripes, lower parts pale brown with small whitish spots, one series of which forms a median ventral line , the colour of the back is continued on to the belly as indistinct V shaped marks, a somes of light chevron shaped marks upon the tail. The young are dark brown above, with three longitudinal series of rounded, blackish spots, a vertebral and two dorso-lateral; the vertebral series, which are the larger, extend on to the tail, the dorsolateral stop at the vent, lower parts black, this colour separated from the brown of the back by a fine light my ras line, the angles of which correspond to the dorsal spots, a median series of light, transversely arranged spots, best marked anteriorly, and connected with the angles of the zig rag line by a series of small light spots; tail with light, transverse lines Head dark brown above, with black and white markings, chin and throat white

Total length 530, tail 145 mm

Known from three specimens, an adult caught in the Great lake (Tonle Sap) of Cambodis, and two juveniles from the neighbouring district.

294 Enhydris hennetti.

Hyperhina bennetti Grav, 1842, Zool Misc p 67 (China, London). Boulenger, Cat So Erst Mon, 11, 1896, p 8; Bouret, Serp Indochine 1936, p 286 Enhydru bermen, Bouth J Not Rist Son Sum, vs. 1923, p 203, Pope, Rept Chine, 1935, p 309 pl xu Hypurhina moculata Dum, & Bibr 1854, Esp Gén. vu. P 950

China Paris) - Hyperking salydru var maculata Jan. Icon Gén., Lev 30 1868, pl iv, fig 1

Snout blunt, squarish, internasal small, well separated

from the loreal; frontal broader than the supraocular; loreal as long as high; 7 supralabials, 4th touching the eye, 6th-7th largest; anterior pair of genials about twice as large as the posterior pair, in contact with 4 labials. Body stout; scales in 21 rows. V. 158-169; C. 47-53.

Greyish-olive above, with two series of large ill-defined black spots, sometimes connected with one another upon the vertebral line; upper lip, sides of body (scale-rows 2 to 4), and lower parts, yellowish-white, the outer row of scales, ventrals and subcaudals heavily edged with grey; head grey above; the nape with a dark vertebral stripe.

Total length: Q 395, tail 95 mm. Range. Hainan; Southern China.

I obtained three specimens in the Straits of Hainan (Hoi-how); they were eaught at sea by the fishermen in their nets. They appear to be the only examples with exact data of locality.

295. Enhydris chinensis.

Hypsirhina chinensis Gray, 1842, Zool. Misc. p. 66 (China; London); Boulenger, Cat. Sn. Brit. Mus. iii, 1896, p. 8; Bourret, Serp. Indochine, 1936, p. 287.—Enhydris chinensis, Smith, J. Nat. Hist. Soc. Siam, vi. 1923, p. 203; Pope, Rept. China, 1935, p. 311, pl. xiii, A, B, C.

Like bennetti in head scalation but the internasal larger. Scales in 23, rarely 25, rows. V. 136-154; C. 36-52.

Grey above with small scattered black spots which are collected on the nape to form a vertebral line; upper lip, outer scale-rows, and lower parts yellowish-white; outer row of scales, ventrals, and subcaudals heavily edged with grey.

Range. Tong-King; Hainan; Southern China to Formosa. Common in irrigated fields, ponds, and canals in Tong-King (Bourret) and in the lowlands of Southern China (Pope). According to Pope it is found also at considerable altitudes on the plateaus of Southern China, avoiding a true mountain environment. I obtained specimens at sea in the Straits of Hainan (Hoi-how). It feeds on fish and produces from 3 to 12 young at a time.

296. Enhydris maculosa.

Hypsirhina maculata (non Dum. & Bibr. 1854), Blanford, 1879,

J. A. S. Bengal, xlviii, p. 130 (Pegu district). Hypsirhina maculosa Blanford. 1881, P. Z. S. p. 226 (subst. name

for maculata).

Hypsirhina blanfordi Boulenger, 1890, F. B. I. p. 377, and Cat.

Sn. Brit. Mus. iii, 1896, p. 10; Sclater, J. A. S. Bengal, 1891,
p. 244; Wall, J. Bombay N. H. S. xxix, 1924, p. 866.

Snout blunt, squarish; internasal small, separated from the lorcal, which is about as long as high; frontal broader

2 c 2

than the supraceular 7 supralabials 4th touching the eye last 2 largest anterior pair of genusis much larger than the poster or par in contact with 4-5 labials Scales in 25 rows Body very stout V 125-130 C 33-45

Blackish selv will 3 rows of largish irregularly-shaped black spots down the back each spot including several scales lower parts whit is the outer scale-rows and outer edges of the ventrals dark edged a series of dark spots down the

middle of the ventrals

Total length 300 tail 45 mm

Range S Burma (Pegu district near Bassein) Known
only from a few specimens

297 Enhydris hocourti.

Hyprich as becomer Jan. 1865, Arch. Zool. Anat. Phys. u.p. 213.
(Bangkok, Prus) and Icon. Gen. Lar *8, 1883 pl. v fig 2
Boulever Cat. So., Brit. Mins. in, 1895, p. 10 and Egyl.
Maky You 191* p. 161. Piower P. Z. 8 1899 p. 816. Smith.
J. Mail. His Go. Saum. I, 1914, p. 100, photo and fig. Bourret.
Bern. Elith Go. Saum. I, 1914, p. 100, photo and fig. Bourret.

Berp Indochine 1936 p 290

Rypersing mult i sents Trant 1885 Rept Batr Cochunchine,
P 41 and Mas Parie Indo Chine, Zool, 1904 p 484 (Cochin

China (Paris)

Hyper has produce Werner 1923 Ann. Asturbat Mus Wied, Exrv. p 163 (type loc unknown Vienns) Smith, Ann. Mag hat Hust (10) L 1928, p 497 Hyper has becomed sectorogeness Bourret 1938 Serp Indochine

p 201 (See Trang Cochin China; Paris)

Snoot broadly rounded internaed usually undivided touching or just separated from the lorsal frontial nervet fant the suprascular tored a lettle longer than high. To suprascular the expression at the compared to the suprascular and the compared to the contract of the suprascular and the contract of th

Young—Greensh black above with narrow yellow trans-

verse burs or sense of the with frame scales with or without a small median pept forming more or less distinct long tudual lines lower parts yellow the dark colour of the back tapering into vertical bars on the sides of the body and forming complete or interrupted rims scross the belly in the adult the dark green is replaced by olive and the

markings are much less distinct

Total length & 620 tail 100 2 1140 tail 150 mm

girth 140 mm

Eange Siam as far north as Paknampo Cambodia
Cochin China the Malay Peninsula as far south as Kedah

Bocourts Water Snake is the largest both in length and girth of all the Homaiopains. It is not uncommon in the law lying country in the vicinity of Bangkok and in Cochan China Its temper is uncertain and its large size enables it to inflict a very serions bite if handled carelessly. Those that I kept fed freely on frogs. A female obtained in Kedah by Major Flower gave birth to 17 young, their average length being 220 mm.

298. Enhydris dussumieri.

Eurostus dussumieri Dum. & Bibr. 1854, Erp. Gen. vii, p. 953, Atlas, pls. 77, 84 (? Bengal; Paris),—Hypsirhina dussumieri, Jan, Icon. Gén. 1868, Liv. 30, pl. 3, fig.; Boulenger, Cat. Sn. Brit. Mus. iii, 1896, p. 19.

Hypsirhina malabarica Werner, 1913, Jahrb. Wiss. Anst. Ham-

burg, xxx, (2) p. 26 (Cochin, Malabar coast; Hamburg).

Snout blunt, squarish; internasal longitudinally divided, just separated from the loreal; frontal about as broad as the supraocular; loreal squarish; 1 pre- and 2 postoculars; temporals 1+2; 8 supralabials, 4th touching the eye; anterior pair of genials much larger than the posterior pair, in contact with 5 infralabials. Body stout; scales in 27 rows. V. 144-150; C. 34-39; A. 2.

Brown above with three blackish longitudinal stripes, a vertebral and two dorso-lateral; outer three scale-rows whitish, spotted with brown and bordered above with white; ventrals whitish, the outer edges of the shields spotted with brown and with a median line of spots of the same colour.

Total length: 670, tail 75 mm.

The type of dussumieri is a female, and it was said to have come from Bengal. Herr P. de Grys has kindly compared my description of it with the type of Hypsirhina malabarica in Hamburg, and agrees with me that the two should be united. I do not know of any other specimens.

299. Enhydris sieboldi.

Homalopsis sicholdii Schlegel, 1837, Phys. Serp. ii, p. 349, pl. xiii, figs. 4 & 5 (Bengal; Leiden).—Ferania sieboldii, Günther, Rept. Brit. Ind. 1864, p. 284; Anderson, P. Z. S. 1871, p. 180; Murray, J. Bombay N. H. S. i, 1886, p. 219, pl.—Hypsirhina sieboldii, Jan, Icon. Gén., Liv. 30, 1868, pl. iv, fig. 2; Boulenger, F. B. I. 1890, p. 377, and Cat. Sn. Brit. Mus. iii, 1896, p. 11; Sclater, J. A. S. Bengal, lx, 1891, p. 245; Wall, J. Bombay N. H. S. xi, 1898, p. 732, and xviii, 1921, pp. 117 and 920, and xxix, 1924, p. 866.

Feranioides jamnæticus Carlleyle, 1869, J. A. S. Bengal, xxxviii, p. 196 (Jumna R., near Agra; Calcutta).

Snout blunt, squarish; internasal longitudinally divided, touching or just separated from the loreal; frontal broader than the supraocular; loreal about as long as high; sometimes 2 preoculars, the lower of the two and the postocular often extending to below the eye; 7 or 8 supralabials, 4th touching the eye, last 1 or 2 horizontally divided; anterior pair of genials much larger than the posterior pair, in contact with 4 or 5 labials. Body stout; scales in 29 (rarely 31) rows. V. 147-158; C. 48-56.

390

Whitish or buff above, with dark brown, black-edged elliptical or rhomboidal, transverse, spots broader than their interspaces, a series of roundish spots on each side alternating with the dorsal spots head with three dark brown longitudinal stripes confluent between the eyes . lower parts white, chequered with black

Total length 780 tail 110 mm (2)

Range India (Travancore, Bombay, Delhi, Agra, Saugor, Fyzahad, Pusa Patna Champaram, Mymensingh); Assam (Samaguting) Burma (Pegu, ade Wall).

Genus HOMALOPSIS.

Homalopus hubi & Hasselt, 1222 Alg Konst Lett Bode, i.7, p 101 and Is s 1822, p 474 (type Coluber horndus), Boulenger, F B I 1890 p 373, and Cat So But Mux. in, 1896, p 13. Pythones Blyth, 1859, J A. S. Bengel, xxviu, p. 297 (type sentsonsis)

Maxillary teeth 11 to 13, followed by a pair of slightly enlarged, grooved fange; anterior mandibular teeth much longer than the posterior, eye small with vertical pupil; head distinct from neck, with large shields more or less complets, master from neck, with large shelds more or less com-plets, master method to manother, the intermanal being behind them, forest present; body cylindrical; scales structed and strongly keeled, in 39 to 47 rows, ventrals well developed, tail moderate, subcaudals paired. A single **SDECIM**

300 Homalopsis buccata.

Romell, 1801, Ind. Serp u. p. 39, pl. xxxiii (Java) Coluber buccutus Linnaeus, 1754, Mus. Ad. Frid. p. 23 pl. xxx. Secondar Images, 1754, Mm Ad. Frid. 97 J. Fridance Boronica Girl. Nat. 10th 40; 1708, p. 217 (Ind. p. 97) Fridance Boronica Girl. Nat. 10th 40; 1708, p. 217 (Ind. p. 97) Fridance F. B. I. 1890 p. 374, fg. and Cat. Sp. Brrt. Mos. St. 1890, p. 18; F. B. I. 1890 p. 374, fg. and Cat. Sp. Brrt. Mos. St. 1890, p. 18; Exx. 1974, p. 867, and xxx, 1975, p. 817; Smith. J. Nat. Het. Sco. Sam., 1914, p. 101 Sourret, Serp. Ludochim. 1826, Sco. Sam., 1914, p. 101 Sourret, Serp. Ludochim. 1826, P 293

Coluber monolis Linn 1758 Syst Nat Ed 10, p 221 ("America"): Andersson, Bih. Svens \et Akad, Stockholm, zxiv, 1893, iv.

8 p 34. Coluber suballudus Gmelin, 1789, Byst Nat us, p 1103, based on

Sebs, u, pl. 21, fig 3)
Coluber horridus Daudin, 1803, Hist Nat Rept vu, p. 71
Misc. p. 65 Homolopers hardwickes Gray, 1842, Zool. Misc. p. 65 (India:

Homolopeus semssonate Blyth, 1855 J A B Bengal, zziv. p. 187 (Mariaban ; Calcutta)

Snout broadly rounded , nostril connected by suture to the first labial, internaeal often divided by a longitudinal suture prefrontals sometimes separated by an azygons scale : frontal usually broken up into two or more pieces, the anterior half entire, usually narrower than the supraocular, parietals

short, about as broad as long, usually entire; loreal elongate, sometimes divided by a vertical suture, not touching the internasal; I pre- and 2 postoculars; often 2-3 suboculars separating the eye from the labials; temporals small, scale-like; 10-12 supralabials, 5th and 6th below the eye, those posterior to it usually divided horizontally: 2-3 pairs of

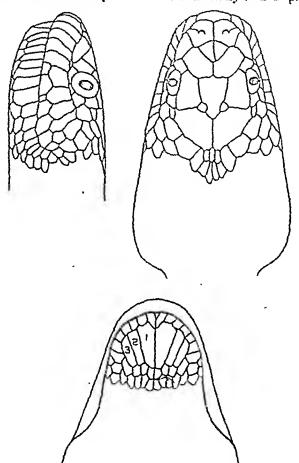


Fig. 123.-Homalopsis buccato. (After Boulenger, F. B. I. 1890.)

genials in a transverse row, inner largest and in contact with the first three labials. Scales in 43-47, usually 45, rows. V. 3 and 2 160-176; C. 3 78-103; 2 70-91 (for specimens from the Indian and Indo Chinese regions).

Young blackish above with narrow white cross-bars, usually a broad one alternating with a narrow one, the latter often incomplete; head white above with regular black and brown

markings, namely a triangular spot on the tip of the mout a stripe been ng through the eye to the angle of the mouth, and an ovar spot on the parietal region lower scale-rows and ventrals white the latter with a series of small black spots on their outer edges somet mes absent tail below thickly spotted with dark brown or black.

With age the markings become indistinct and fully grown individuals are dark greenish or deep plum-coloured above the light cross-hars being dull yellowish in colour margined

with black belly jellow throat white

An example from Eastern Stam (B.M Coll) has the whole of the lower parts grev th ckly spotted with black

Total length 3"00 tail 190 2 1310 tail 285 mm.

Range Rivers canals and pends of Burms south of lat 17° Sam Cambod a Cochin China, the Maley Pennsus and Archipelago Common in southern Indo China usually not found far above tidal limits

Of alongush durpos ton never attempting to but when handled feeding on fish and frogs From 8-21 young are born at a time Individuals that I kept in captivity spent most of the r time on land and hurrowed frequently into the mud of the r cage

Genus CERBERUS.

Corberus Circier 1839 Reg. Annn. 2nd ed in. p. 81 (type Galader criberus). Boulenger V. B. I. 1890, p. 374 and Gat. Ro. Brit. Mun. 11,805 p. 15. Smith. Bull. Radbe Mins. 20. 1,935, p. 81. Harrist Dandan, Mag. Encyclop. An. 8, v. p. 434; Biojineger 1907. Repress Leaves. Herpei Japan, p \$04

Maxillary teeth 12 to 17 parietal shields broken up into



Fig 124-Maxilla and pulate-maxillary arch of Cerberus shyackeps

small scales scales in 21-20 rows other characters as in Homalopers but the head shields less regular in outline. Three species have been described australia is scarcely more than a race of thynchops the third (microlepus) inhabits the Philippmes

301. Cerberus rhynchops.

Russell, 1796, Ind. Serp. i, p. 23, pl. xvii (Ganjam), and ii, 1801,

pl. xl (no locality given).

Hydrus rhynchops Schneidor, 1799, Hist. Amph. i, p. 246 ydrus rhynchops Schneidor, 1799, Hist. Amph. i, p. 246 (based on Russell, pl. xvii).—Cerberus rhynchops, Günther, Rept. Brit. Ind. 1864, p. 279; Anderson, P. Z. S. 1871, p. 179; Murray, Zool. Sind, 1884, p. 381; Boulenger, F. B. I. 1890, p. 374, and Cat. Sn. Brit. Mus. iii, 1896, p. 16, and Rept. Malay Pen. 1912, p. 163; "Keswal," J. Bombay N. H. S. i, 1886, p. 173; Wall & Evans, ibid. xiii, 1900, pp. 345 and 612; Alcock & Rogers, Proc. Roy. Soc. London, 1902, p. 449; Annandale, J. A. S. Bengal, 1905, p. 176, and Mem. Ind. Mus. v, 1915, p. 170; Wall, J. Bombay N. H. S. xvi, 1905, p. 307, and xxvi, 1919, p. 89, col. pl. and Sn. Ceylon, 1921, p. 257; Bourret, Serp. Indochine, ii, 1936, p. 205; Smith, J. Nat. Hist. Soc. Siam, i, 1914, p. 102; Kopstein, Treubia, Buitenzorg, xiii, 1931, p. 3.—Hurria rhynchops stein, Treubia, Buitenzorg, xiii, 1931, p. 3.—Hurria rhymchops Wall, J. Bombay N. H. S. xxix, 1924, p. 867; Prater, ibid. xxx, 1924, p. 171. Elaps boxformis Schneider, 1801, Hist. Amph. ii, p. 301 (type

loc. not given).

Hydrus cinercus Shaw, 1802, Gen. Zool. iii, p. 567 (based on Russell, pl. xvii).—Cerberus cincreus, Cantor, 1839, P. Z. S. p. 54 (Bengal; col. sketch in Bodleian Library).

Hurria schneideriana Daudin, 1803, Hist. Nat. Rept. v, p. 281

(substit. name for Elaps boxformis).

Coluber cerberus Daudin, 1803, Hist. Nat. Rept. vii, p. 167 (based on Russell, pl. xvii).

Homalopsis molurus Boie, 1826, Isis, p. 213 (based on Russell,

pi. zi).

Cerberus grantii Cantor, 1836, Tr. Med. Phys. Soc. Calcutta, viii, p. 135 (India). Coluber obtusatus Reinhardt, 1837, in Schlegel, Phys. Serp. ii,

p. 341. Homalopsis schneideri Schlegel, 1837, Phys. Serp. ii, p. 341, pl ziii, figs. 6 & 7.

Cerberus russelli Cuvier, 1837, in Schlegel, Phys. Serp. ii, p. 342

(Pondicherry).

Cerberus acutus Gray, 1849, Cat. Sn. Brit. Mus. p. 65 (Borneo; London).

Cerberus unicolor Gray, ibid. p. 65 (Philippines; London).

Snout broadly rounded: nostril connected by suture to the first labial; internasal divided by a longitudinal suture; frontal broken into small scales, the anterier half usually being distinct; loreal large, higher than long, extending well on to the upper surface of the snout, in contact with, or just separated from, the internasal; 1 pre-, 1 post- and 2 suboculars; temporals small, scale-like; 9-10 supralabials, 5th and 6th below the eye, the last 2 or 3 horizontally divided; 3 pairs of genials, anterior largest, in contact with 4 infralabials; the remaining pairs separated by small scales and partly wedged in between the anterior genials and the labials. Scales striated and strongly keeled, in 23-25, rarely 21, rows, the laterals scarcely larger than the median. V. (122) 137-159; C. 50-68; A. 2.

Greyish, brownish or olivaceous above with more or less distinct dark spots or cross-bars; a black streak on the side of the head, passing through the eye and on to the neck,

always distinct in the joung, lower parts from pale to deep vellow, variegated or harred with black or almost entirely dark grey the outer 3 scale rows usually entirely yellow

Total length 3 770 tail 115 . Q 1000, tail 180 mm

Range Coasts and tidal rivers of India and Indo-Chins from Bombay to Cochin China, Ceylon, the Andaman and Nicobar Islands, the Malay Peninsula and Archipelago

A comparatively rare snake on the coasts of India but exceedingly common in southern Burms and the Gulf of Siam, at or near the mouths of rivers; it has been found in fresh water more than 100 miles from the coast. Of quiet and moffensive disposition, it feeds on fish and has often been caught by anglers on their hook From 8 to 26 young are born at a time, they measure from 175-200 mm in length

Genus GERARDIA.

Gerarda Gray 1849, Cat Sn Brit Mus p 77 (type bicolor) -Gerordia Roulenger, F B I 1890, p 379, and Cat Sn. Brit Mus ш 1896 р 20

Campylodon (not of Curser 1832) Dumersl, 1833, Mem. Ac So. France, xxus p 499, and Dum, & Bibr Erp Gén. vu, 1854 p 963 (typo precontanum)

Helcophie F Maller, 1884, Vorh. Not Gee Basel, vu. p 286 (type

Raverens)

Maxillary bone extending beyond the palatine, with Il to 13 teeth, followed by two strongly enlarged, backwardly projecting grooved fangs, mandibular teeth subequal Eye small, with vertical pupil, head not distinct from neck, with large shields masals separated by an internasal; lores! present Body cylindrical, scales smooth, in 17 rows,

ventrals well developed, tail short, subcaudals paired A single species

302 Gerardia prevostiana.

Cerating Preventants, Eydoux & Gervals, 1832-1837, in Guler Ming. Zool, Cl. ul., p. 5, col. pl. 16 (* Manila*) – Morrorio preventanta Boulesquer, F. B. J. 1800, p. 377, and C. S. Ban Hert Jines in, 1826, p. 201 Well & Errain, J. 377, and S. C. Chan, 1837, p. 201 Well & Errain, J. 377, and S. C. Cylon, 1837, p. 202, and J. Homba, V. H. B. XXX. 1924, p. 805, Smith, Bull Raffier Run, no. 2 1930, p. 62, Fraier, J. Bombay N. H. S. XXX. 1924, p. 181, decords boology Gray, 1849 Cat. Sin. Brit. Mus. p. 77 (type locality brit.) and the control of t

p 286, pl v, fig 2

Nostril in the nasal, frontal much broader than the supraocular, 1 pre- and 2 postoculars, loreal not in contact with the internasal, temporals 1+2 or 2+2; 7, rarely 8, supralabials, 4th touching the eye, 8th when present, very small; 2 pairs of genials, the anterior pair much the larger, in contact with 4 labials, posterior pair separated by scales; dorsal scales subequal. V. 145-153; C. 29-36; A. 2.

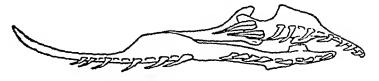
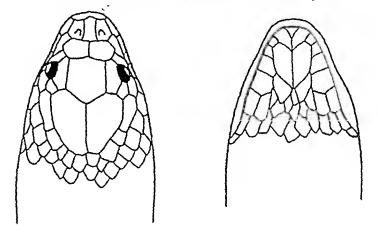




Fig. 125.—Palato-maxillary arch and maxilla of Gerardia prevostiana.



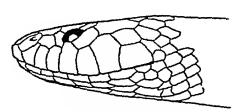


Fig. 126.—Gerardia prevostiana.

Light or dark grey or brown above, uniform; upper lip, chin and 3 outer rows of scales white; ventrals whitish with dark edges or entirely grey.

Total length: \$525; tail 62 mm.

Range Coasts and tidal rivers of India (Bombay and Malabar districts), Ceylon (Kelani river); Burma (Gulf of Martaban) W coast of the Malay Pensinsula

Genus FORDONIA.

Fordonia Gray 1842, Zeol. Miss. p. 67 (type leucobalia), Boulenger, F. B. I. 1830 p. 378 and Cat. Sn. Brit. Mus. in, 1985 p. 21 Hydropus Fitninger 1843, Syst. Rept. p. 25 (type Homalopus kucobalia Schley)

Hemodontus Dumerit, 1853 Mem. Acad. Sci. France, XXIII, P 494, and Dum & Bibr., Erp Gén. VII, 1854, p 882 (subst. name for Fordona)

Manilary bone with an edentulous space in front extending beyond the plaintine, with 6 to 8 teets followed after a dunt between the space of the state of the state of the interval by 2 enlarged grooved teeth, mandibular teeth subequal eye very small, with vertical pupil, head not distinct from neck, covered with large shields, insals separace by the internasal normally no loreal; body eyindine, rather stout, scales sucouth, in 25-29 rows, ventrals well developed, tall short subcaudals paired

A single species

303 Fordonia leucobalia

Homolopest Isrocolcios Schlegel, 1837, Dbys Serp 1, p 345, p 1811, fg 8 & 9 (Timor, 1.4prien).—Homolomius isrocolcios, Jan, 16en, Gen. 1848 Lav 28, vr. fg 1 — Fordenst isrocolcios, Bellement P B 1, 1890 p 378, and Cat 8a, Dritt Mint 1811, and Rope Malay Fen. 1912, p 184, De Boote, 1811, and Rope Malay Fen. 1912, p 184, De Boote, 1811, and Rope Malay Fen. 1912, p 184, De Boote, 1812, and Rope Malay Fen. 1912, p 184, De Boote, 1811, and Rope Malay Malay Fen. 1818, and 1811, p 1811,

Fordons sancolor Gray, 1849 Cat En. Brit Mus p 77 (Borneo, London) Hemodonius ckalybene 1863, Jan, Elenco, p 79, and You. Céc. 1868 Liv 28, vi. fig 3 (Singapore, Milan. Based on an abnormal specimen, the metermacal being absent, 4ds Bouleuge y v. V. State of the control o

abnormal specimen, the intermacal being absent, fide Bouleuger F B L)

Fordonic becolor Theobald, 1868, J Linn. Soc London, p 55

(near Rangoon)

Fordons Garabate Maclesy, 1878, Pr Lunn, Soc N S. Weles, ii, p 219 (Port Darwin)

Nostril in the nasal, frontal much broader than the

supracular, rarely a small loreal, 1 pro- and 1-2 postordars, 1-2 anterior temporals, irregular in azo and shape, 5 supraishals, 3rd touching the eye, 5th longest, 2 pairs of gendals, subquadrangular in shape, the anterior in contact with 3-4 labals. Scales in 25-27 rows in the Oriental Region-V 138-156, the last 1-2 offen dynded, C, 23-43

Greyish or brownish above, uniform or with small black

spots in the young . whitish or yellowish below

This form, var. unicolor, is found throughout the whole range of the species, but is the only one found in the Oriental Region; var. leucobalia is restricted to the seas south of the Equator.

Total length: 3 680, tail 100; \$ 940, tail 125 mm.



Fig. 127,—Maxilla and palato-maxillary arch of Fordonia leucobalia.

Range. Tidal rivers and coasts of Bengal (Sandarbans), Burma and Cochin-China; the Nicobar Islands; the Indo-Australian Archipelago to N. Australia.

Kopstein (1931) states that it is fairly common at Cheribon on the N. Coast of Java, living on crabs and inhabiting their

holes.

Genus CANTORIA.

Cantoria Girard, 1857, Proc. Acad. Nat. Sci. Philad. p. 182 (type violacca); Günther, Rept. Brit. Ind. 1864, p. 278; Boulenger, F. B. I. 1890, p. 380, and Cat. Sn. Brit. Mus. iii, 1898, p. 23. Hydrodipsas Peters, 1859, Mon. Akad. Berlin, p. 270 (type clapiformis).

Maxillary bone projecting beyond the palatine, with 9 to 11 teeth, followed after an interval by a pair of enlarged grooved fangs; anterior mandibular teeth longest. Eye small with vertical pupil. Head not very distinct from neck, with large shields; nasals separated by the internasal; loreal present. Body cylindrical, elongate; scales smooth, in 19 rows; ventrals moderately or well developed, not keeled; tail moderate, slightly compressed, subcaudals paired.

Two species; the second, C. annulata de Jung, inhabits

New Guinea.

304 Cantoria violacea

Contone resineer Girard, 1857, Proc. As. Nat. Sci. Philad. p. 185 (Sungsport), and US Explor Exped. Herp 1855, p. 185, & Atlan, cot pl. 21, figs 7-10. Bendenger, F. B. I. 1860, p. 230, fig., and Cat. Sn. Brit Max. in, 1806, p. 23, and Rept., Maky Fen. 1912 p. 185, Walk B. Evans, J. Bombey N. H. St. 231, 1901 p. 612. Walk Lind Txun, 1914, p. 186, and xxiv., 1924, p. 884, De Food Rept. Indo-Austral Arch., 1917, p. 1917, p. 1914, Hydrodypeas elapyformus Petera, 1859, Mon. Akad. Berlin, p. 270, pl.—, fig 1 — Hemsodontus elapyformus, Jan. Icon. Gén. Ophid. 1858 Liv 28 pl vs. fig. 2

Cantoria elongata Ganther, 1864, Rept Brit. Ind. p 277 (based

on Girard a specimen) and Grand State of Grand State of Grand Education and Grand Education and Grand Education of Mondament R.: type lost); Anderson, P Z S 1871, p 178

Nostril in the nasal, frontal much broader than the supraocular, panetals elongate. loreal well separated from the

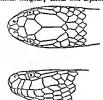


Fig 128 -- Cantoria violacea (After Boulenger, P B I 1890)

internasal, I pre-, I post- and I subocular. I long anterior temporal. 5 supralabials, 3rd and 4th below the eye, last 2 largest , 2 pairs of genuls in contact with one another, the anterior pair larger, in contact with 4 labials; dorsal scales subequal V 260-291, a little more than half the hreadth of the body. C 53-57; A 2 A specimen from Ross I in the Andamans has 244 ventrals and 69 caudals Two colour forms -

I Blackish above with yellow transverse bands, narrower than their interspaces on the vertehral line, widening and as broad as or broader than their interspaces on the sides of the body; head with white spots, whitish below, or with grey markings continued from the dark colour of the back, on the fail they form complete rings.

BITIA. 399

2. Dark brown above, with narrow white cross-bars; outer scale-rows and belly white; head as in I.

Total length: 2 1200, tail 140 mm.

Range. Tidal rivers and coasts of Burma and the Malay Peninsula, from the Gulf of Martaban to Singapore; the Andaman Is.; the Indo-Australian Archipelago.

Genus BITIA.

Bitia Gray, 1840, Syn. Cont. Brit. Mus., ed. 42, p. 42 (nom. nud.), and Zool. Misc. 1842, p. 64 (type hydroides).
Hipistes Gray, 1849, Cat. Sn. Brit. Mus. p. 77 (type fasciatus); Boulenger, F. B. I. 1890, p. 381, and Cat. Sn. Brit. Mus. iii, 1896, p. 24

Maxillary bone projecting beyond the palatine, with 11 to 13 teeth, followed after an interval by a pair of slightly enlarged grooved fangs; anterior mandibular teeth largest. Eye small, pointing almost directly upwards, with vertical pupil. Head scarcely distinct from neck, with small shields; nasals

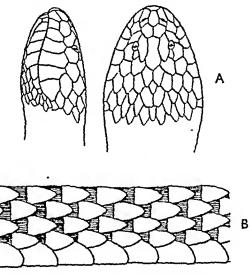


Fig. 129.—Bitia hydroides. A. Dorsal and lateral views of head. (After Boulenger.) B. Dorsal scales × 3.

separated by the internasal; nasal cleft transversely dividing the nasal shield; parietals broken up. Body cylindrical, scales smooth, in 37-43 rows; ventrals rather narrow, with two strong lateral keels. Tail short, feebly compressed, subcaudals paired.

A single species.

305 Bitia hydroides.

400

Bitta hydroides Gray 1842, Zool Misc p 64, and Cat Sa. Brit

Mus 1849 p 63 (type locality unknown . London) Homolopes hydrina Cantor, 1847, Cat Malay Rept p 104, pl. xl, fig 4 (Coast of Kedah, Malay Penmeula) - Hyprotes hydroms, Gmther Rep. Brit Ind. 1864,p 237,p Lvary.

J A. S Bergal, zrar, 1870 p 207, Anderson, P Z S 187, J A. S Bergal, zrar, 1870 p 207, Anderson, P Z S 187, J A. S Bergal, zrar, 1870 p 207, Anderson, P Z S 187, J A. S Bergal, zrar, 1870 p 207, Anderson, P Z S 187, J A. S Bergal, zrar, 1870 p 207, Anderson, J Boulenger, 187, J Britannia, J Boulenger, J Britannia, J Britanni N H. 8 xm, 1900 & 1901, pp 347 and 616, Wall, ibid. xxix,

1924 p 868 Hippites fasciatus Gray, Cat Sn Beit Mus 1849 p 78 (E Indies ,

Nasal shield almost or completely divided into an anterior and posterior portion by the nasal cleft, frontal long and narrow, not much broader than the supraocular, lorest well separated from the internasal, a long preocular, a small postocular and a large post-subocular, parietals divided into regular scales temporals 1+2, 7 supralabials, 4th below the eye 5th and 6th highest, anterior pair of genials much longer than the poeterior pair, in contect with 5 labials Dorsal scales elongate, enturely attached to the interstitual akin and leaving a gap between the base of one scale and the apex of the one preceding it . Ventrals narrow, about half as broad as the body, & & Q 157-172, C & 31-35, Q 21-27,

Pale greyish above, with blackish cross bars, as broad as or a little narrower than their interspaces; head grey, outer scale-rows and lower parts white Wall and Evans (1900) describe it in life as having "alternate yellow and black dorsal bars the belly buff The colours on the back are bright

and the scales glazed like enamel"

Total length Q 450, tail 35 mm Range Coasts and tidal rivers of Southern Burms, the Malay Peninsula and Siam Apparently common in the Gulf of Martaban.

Two females obtained in September by Wall & Evans contained three and four fully formed embryce, respectively

The type of But hydroides is much desiccated, but the characters are sufficiently distinct to be sure of the identi fication

Genus HERPETON.

Erpeton Lacepède, 1800, Bull, Sc Soc. Phil. Parss it. p 189 (type tentaculatus)—Herpeton Gunther, Rept But Ind. 1864, p. 233; Boulenger Cat Sa. Brit Mus in, 1805, p 25 Rimoperus Merrem, 1820, Tent Syst Amph. pp 14 & 81 (subst name for Erpeton)

Maxillary bone not extending as far forwards as the palatine, with 12 to 14 teeth, followed by a pair of grooved

* A condition found also in the Xenodermins see pp 123-129

fangs which are not larger than the preceding teeth; anterior mandibular teeth largest. Eve small with subelliptic or rounded pupil. Head distinct from neck, with large shields; two rostral appendages, covered with small scales. Body depressed, with strongly keeled scales, in 35-39 rows; ventrals very narrow, bicarinate. Tail moderate, no distinct subcandala

A single species.

306. Herpeton tentaculatum.

Erpeton tentaculatus Lacépède, 1800, Bull. Sci. Soc. Phil. Paris, ii, p. 169, and Ann. Mus. Nat. Hist. Paris, ii (10), 1803, p. 284, pl. L (type locality unknown).—Herpeton tentaculatum, Günther, P. Z. S. 1860, p. 114, col. pl. xxiii; Morice, Ann. Sci. Nat Paris (6), ii, 1875, (5) pl. xx; Boulenger, Cat. Sn. Brit. Mus. iii, 1896, p. 25; Smith, J. Nat. Hist. Soc. Siam, i, 1914, p. 103, photo head; and Bull. Raffles Mus. no. 3, 1930, p. 63; Gyldenstolpe, Küngl. Vet. Akad. Stockholm, lv, 1916, p. 19; Bourret, Serp. Indochine, 1936, p. 305, fig.

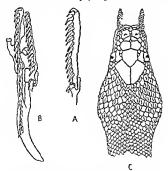
Rostral separated from the nasals by small scales; nasals usually in contact with one another: internasal longitudinally divided; an azygous scale between it and the prefrontals; frontal large, much broader than the supraoculars, separated from them by small scales; loreal region covered with small scales; I pre- and I postocular; temporals small, scale-like, strongly keeled; 13-15 supralabials, separated from the eye by suboculars; 3-4 pairs of narrow genials in a more or less transverse series. Scales in 35-39 rows, very strongly keeled: ventrals small, about twice as broad as the adjacent scales, bicarinate, 109-136. Rostral appendage about as long as its distance from the eye.

Reddish-brown above with two ill-defined dark, longitudinal stripes, one on either side of the vertebral line, the intervening area having dark spots or cross-bars, or almost entirely dark brown; a broad dark lateral stripe, starting from the snout and passing through the eye, divided on the body into ar upper and a lower portion by a light interval; below yellowishbrown, with a dark stripe on either side of the ventral shields, and usually a series of black, and white or orange, spots or short bars along the outer margin, the light spot in front. Some individuals are very dark grey in colour, the only conspicuous markings being the light spots underneath. Total length: \$2,770, tail 195 mm.

Range. Peninsular and Central Siam; Cambodia; Cochin-

Annandale obtained it in the inland sea at Singgora, and this is its most southern range. It is not uncommon in ponds and sluggish waters in the country round Bangkok if one knows where to look for it, and, according to Bourret, VOL. III.

it is not rare in Cambodia and Cochin China. It is entirely acquistic in its halt send on land is stational helpless. It feeds on fish. When handled it neither attempts to hite nor escape. The stiff unbending attitude which it adopts when caught has actual for it the Esameen name of toga kradan' or the smake like a board. The tentacles are not sensitive and have a considerable range of movement when its make hes beneath the water they are pointed in a forward direction with the smale projecting above the water—services.



A Manila. B Palato maxiliary erch. C Dorest view of head

common position for the creature to assume—they are lad back on either aide of the snoat. The function of the tentactes if any is not known but it is possible that in movement they would act as a bait to attract fish. From 9 to 13 young are produced at a time.

Family DASYPELTIDÆ.

Rachiodontidæ Günther, 1858. Cat. Col. Sn. Brit. Mus. p. 141; Reinhardt, Overs. Dansk. Vid. Selsk. Forh. 1863, p. 198.— Rhachiodontinæ, Boulenger, Cat. Sn. Brit. Mus. ii, 1894, p. 353. Elachistodontinæ Boulenger, 1896, Cat. Sn. Brit. Mus. iii, p. 263.

Palato-maxillary arch edentulous except for a few minute teeth; anterior thoracic vertebræ with the hypapophyses much developed, penetrating the wall of the æsophagus.

Two genera, namely the aglyphous African Dasypeltis and the opisthoglyphous Asiatic Elachistodon, both monotypic.

The grooved teeth of Elachistodon can no longer be regarded as sufficient to maintain it in a family distinct from that of Dasypellis.

The enlarged hypapophyses of the thoracic vertebrae are developed in the same way in both genera. In the specimen

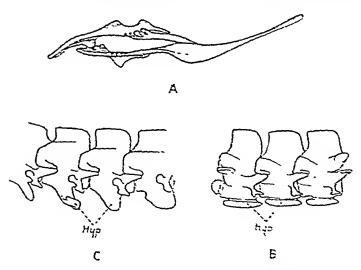


Fig. 131.—Elachistodon exetermanni, A. Palato-maxillary arch. B. Anterior, and C. Pesterior themeic vertebra, sheming hypopophysial enlargements.

hup., hypapophyss.

of Elachistodon restermanni from Jahraiguri. 26 vertebræ carry enlargements, the first being opposite the 10th ventral shield. In the first 18 the enlargement is clongate and extends nearly the whole length of the vertebra; it has a rounded edge which projects through a lengitudinal slit in the cosphageal 2 p 2

wall (fig. B). the remaining 8 are much harrower and longer and do not penetrate the membrane (fig. C). In this make, as in its relative Daspeltis scaler, there is enormous development of the Hardenan gland.

Nothing is known of the habits of Elachistodon, but presumably it is an egg eater, although not exclusively so, the Dosspolius The enlarged hypapophyses serve to break the shell when the egg has been awallowed and the mouth is closed the contents are then passed on to the stomach, after which the fragments of shell are reguigitated.

Genus ELACHISTODON.

Electroscon Reinhardt, 1863, Overs Dansk Vid Selak Fort. p 206 (type watermanns), Boulenger, F R I 1890, p 262, and Cat Sn Bnt Mus ul. 1826, p 263

Bones of the polato maxillary arch greatly thunned, maxilla edentitions except for two minute teeth, followed by two mil growed fangs at the posterior extremity, polations with four manute teeth, edentitions in front and behind, maxillar edentitions in front, followed by a series of ministrate each, at to 12 in number, head fairly distinct from neck period of the polation of the polation polation and print the polation part of the massi shield. Body moderately elongate, feebly compressed Scales smooth, in 15 rows, the vertebral series, feebly compressed Scales smooth, in 15 rows, the Hypapophyses absent in the posterior part of the vertebral column.

307 Elachistodon westermanni

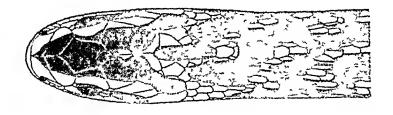
INDIAN EGO EATER

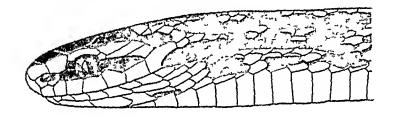
Elechstoton westermenne Reunhardt, 1 c a p. 205, pl. (Rangpur, Bengal, Corenhagea), Blanford, J Asias Soc Bengal, xirv, 1875 p. 907, Boulenger, P. B. I 1880, p. 283, and Cat Sa. Brit Man in, 1996, p. 284, Wall, J Bombey N H S xxis, 1913, p. 409, fig. and xxiv, 1921, p. 878 Shaw & others, J Bengal N H B xvi 1941, p. 65

infernaals as large as the prefrontals, frontal large, longer than its distance from the end of the spont, nasal large; I small precents the present present the present present as 2 mg anterior temperals; 6 or 7 supralabils, 3rd end 4th touching the eye; 2 pairs of genals Eccles in 16 rough 90 of the neck, the vertebral series much enlarged, hexagonal V 208-217, C 59-64 A I.

Park ofter frown to blackish above, the vertebral scales vellowish white, except at their outer margins, forming a light vertebral stripe extending the whole length of the body.

sides spotted or flecked with the same colour; whitish below, the outer margins of the ventrals and adjacent row of scales edged with brown; a yellow stripe along the top of the head from the snout to the angle of the mouth, passing above the eye; an angular bar or spot on the nape, lips yellow.





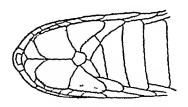


Fig 132.-Elachistodon westermanni

Total length: 9 800, tail 130 mm.

Range. Northern Bengal (near Mal Jalpaiguri district,

Rungpore); Bihar (Purneah).

Three (five, fide Shaw) specimens are known.

Family ELAPIDÆ

PROTEROGLYPHA.

Liopude Boie 1827, Liu: p Albi Guather Rept Brit Ind 1885, p 337—Elopuse, Isoulenger, F B I 1830, p 332, and Cat So. Hatt Mus in 1898, p 316, Verney, Arch Natura Berioz, frans 1923 (8), p 161, Hofistetter, Arch Mus. Hatt Nat Lyon, xv. 1939, p 62

Characters as in the Colubride [p. 114], except the dentition Poison fang, attached to the antenor end of the maxillars bone, ansully followed by one or purer small solid teeth. Itead shields normal, except for the loreal, which is always absent, pupil round in all the Anatic general exsplindincal Hyapophyses developed throughout the vertebral rollium.

The Elapida, together with the Hydrophinds, comprise the proteroglyphous group of sucke, or show which have peach large at the anterior end of the mexille. In the poson fang, the folding of the tooth is complete, and a channel is formed, but the immon of the two folds can always be seen as a groove on the front of the tooth (see p. 3). Grooving of the teeth, however, is not confined to those on the maxillary home. In many fully grown specimens of Naya, Rungarus and Hydrophis examination with a good lens will show that grooves also exist on the affects and inner superior of the teeth as well.

The Elapids are found throughout the tropical and subtropical regions of the world. They are strongly represented in Australia, and the majority of the snakes that are found there belong to this family

They are not found in Europe today, but fossil Elapids, Palmonaja, have been described from the Miocene and Phocene of France (Hoffstetter, 1939)

Some 30 genera are known, three inhabit the region covered by this work. All the oriental Elapids are overparous, Naja and Hungarus have parental instincts.

Key to the Genera

I Maxillary bone not extending forwards be youd the palatine, scales not oblique the vortebral screen strongly enlarged (except in lividia)

BUNGARUS,

II. Maxillary bone extending forwards beyond the palatine; vertebral series of scales not enlarged (except in N. hannah).

A. Scales in 13-15 rows throughout the body;

CALLOPHIS, p. 418.

B. Scales in 15-25 rows on the body, disposed obliquely, more on the neck, which is dilatable

NAJA, p. 426.

Genus BUNGARUS.

KRAITS.

Bungarus Daudin, 1803, Mng. Encycl., An. 8, v, March, p. 434, based on Russell's "Bungarum pamah," i, 1796, p. 3, pl. iii, and Hist. Nat. Rept. v, 1803, p. 263 (type fasciatus); Boulenger, F.B.I. 1890, p. 387, and Cat. Sn. Brit. Mus. iii, 1896, p. 365; Wall, J. Bombay N. H. S. xviii, 1908, p. 711, and Pois. Sn. India, 1928, p. 11.

Pecudoboa Oppel (non Schneid., 1801), 1811, Ord. Rept. p. 68 (type fasciatus).

Aspidoclonion Wagler, 1828, Icon. Amphib. i, tab. 2 (type semifasciatus).

Megwrophie Gray, 1849, Ann. Mag. Nat. Hist. (2) iv, p. 247 (type formosus=flaviceps). Xenurelaps Gunther, 1864, Rept. Brit. Ind. p. 344 (type bunga-

Maxillary bone not extending forwards beyond the palatine; poison fangs followed by from 2 to 4 small teeth. Head not distinct from neck; head shields normal, no loreal; eye moderate or small, with round pupil. Scales smooth, in 13 to 19 rows, the vertebral row strongly enlarged, except in lividus; tail moderate; subcaudals single or some of them paired.

Dorsal vertebræ with strong lateral expansions connected

with the pre- and postzygapophyses (fig. 133, B).

Common characters, unless otherwise stated :- Nostril between two nasals; rostral broader than high; internasals shorter than the prefrontals; frontal as long as its distance from the rostral or the tip of the snout, shorter than the parietals; I preocular in contact with the posterior nasal; 2 post-Oculars; no loreal; temporals 1+2; 7 supralabials, 3rd and 4th touching the eye, 6th usually the largest; 4th infralabial largest, in contact with, or just separated from, the anterior pair of genials, which are as large as, or a little larger than, the posterior. Scales smooth, the vertebral series strongly enlarged, broader than long on the hinder part of the body, Subcaudals undivided, except in flaviceps and bungaroides in which the terminal scutes are paired. As an occasional character one or more paired scutes have been recorded of several other species.

The hemipenis extends to the 6th-9th caudal plate; the distal one-third or half is calyculate, the remainder spinose. The calyces are smallest near the tip of the organ and increase

408 PLAPIDÆ

in size as they approach the spinose area. Each cup is stiff each by spine like structures which, like the ribs of an umbrells, hold the inembrane and project beyond its margin. The transition from the calyculate to the spinose area is fairly abrupt, the largest spines are those nearest the calyces, they are thek and papilla like in form, and bear a small, sharp spine at the IP. The linfrincation of the ruleus is at about the middle of the ealyculate area or the junction of the ealyculate and spinose areas, and the IIps of the sulcus are beere with small spines throughout. I have found considerable variation within the species as regards the number and form of the spines.

Range India , Indo China ; S China , the Malayan Region

and Celebes

With the exception of Bungarus generacus, all the species known are found in the area overed by this work. In their scale characters they are remarkably constant, and a description of the bead shields of one will apply equally will to them all. Whether the three varieties, regarded by Bouleager in the Stategore (1899, p. 363) as colour forms of B cardidus, and the other forms since described by Wall, are true species, or merely colour-varieties, remains to be shown. Each one distinct from the others in colour pattern and occupies its own restricted groupsquical area.

The Kruits are remarkable for the highly polished character of their scales. Wall (1909) states that "The eye is proubled in that the mis not coloured, and as a result the pupil cannot be discerned in life. The organ as a whole looks like a jet bead, and in this respect the smakes of this genus are nearly unique among the Colubrade. The Lycodons alone, as far as

I am aware, share this peculiarity"

The Kraits appear to vary as hitle in their habits as they do in morphology as therefore. Of the three common species, B cornides 15 faccious and B multicincias, much has been written, and no doubt what has been recorded of them will be found equally true for the other and rares species. In disposigned the part of the state of t

The Kritz inhabit more or less open country and at low altitudes, seldom ascending above 3 000 or 4 000 feet, they frequent cultivated areas and are often found in and about buman habitations. Their date consists mainly of snakes, and they will devour with equal aridity both inamless and poisonous species; small mammals, lizatio, frogs, loosides.

and fish have also been recorded as part of their diet, but they

evidently do not form the chief part of their food.

As far as we know, all the species are oviparous. B. caruleus lays from 6-10, B. fasciatus from 8-11 eggs. They are deposited in holes in the ground, or under leaves, and are guarded afterwards by the parent. Very little is known of their breeding habits, which appear to be somewhat unusual. Wall (1924), writing of B. ceylonicus, makes the following comment -"There is evidently something strange about the breeding of Kraits as a genus, for it is a very remarkable fact that out of the large series of specimens of ceylonicus that have passed through my hands, I never got an egg-bound female. The same remark applies to the Indian Krait (cæruleus), scores of which have been sent to me, and to the Banded Krait (fasciatus), dozens of which have been collected by and for me in Assam and Burma.... It would seem, therefore, the adults (ceylonicus) retire about September to mate, and do not dissolve their matrimonial relationship until the young are launched upon the world in March."

Compared with the Cohra and the Saw-scaled Viper, fatalities

Key to the Species.

resulting from bite by the Kraits are rare.

Scales in 13 rows. Terminal caudal scutes in pairs...... flaviceps, p. 410. Scales in 15 rows. Terminal caudal scutes in pairs...... bungaroides, p. 41

I. Terminal caudal scutes in pairs....... bungaroides. p. 410.
 II. Caudals entire throughout.
 A. Vertebrals not or but feebly enlarged.

Uniform black above; C. 35-43 lividus, p. 418. B. Vertebrals strongly enlarged, as broad as or

vertebrais strongly enlarged, as broad as or broader than long.

a. Tail ending in a point; dorsal vertebre not forming a ridge down the back.

Belly uniformly white; C. 37-56.
 Back uniformly black above; C. 49-56.
 Back with narrow white cross-bars arranged more or less distinctly in pairs.
 Back with 27-48 white cross-bars, not arranged in pairs.

arranged in pairs.

Back with 20-25 broad white cross-bars, the median part of each bar spotted with black

sometimes absent in the juvenile; C. 32-42 b. Tail ending obtusely; dorsal vertebræ

forming a ridge down the back.

Alternately marked with black and yellow

annuli

niger, p. 417.

cæruleus, p. 413. fp. 416. multicinetus,

candidus, p. 416. [p. 417. magnimaculatus,

ccylonicus. p. 415.

fasciatus, p. 411.

Scales in 17-10 cours.

Back with narrow white cross burn, arranged more

308 Bungarus bungaroldes.

First bungerede Canter, 1839, P. Z. S. p. 33 (Cherrs Pints, haste Hulls, Lendon etcl. statch in Boulean Library, no 64-creating to the open class of the state of

Scales in 15 rows throughout V. 220-237, C. 44-51, 40

paired, or a few of the anterior scales single.

Black or very dark brown, with white or pale yellowish
transverse lines, or narrow bars, formed of a series of spels
across the lack, those anterior are angular and point forwards,
below the widen, forming broad bands across the brief
a white line series the srout, and a curved one on each aide
from the first and the behind the angle of the month; a
third forming are sometimes very indistinct.

Total length of 1400, tail 160; 9 1000, tail 130 mm

Roage Lastern Humalayas (Darjeeling district; Sikkim), Assam (Khasi Hills), Cachar, Upper Burma (Matsatap and Abke, N E of Fort Hertz)

309. Bungarus flaviceps.

YELLOW READED KRAIT

Suograms fantserps Rembandt, 1813, Vibrank Rohn, Strijt R. p. 1517, Pl. in. fig. 4 d'Aray 1. Cander, Can Mark Popt. 1847, Pp. 174, Pp. 174

Scales in 13 rows throughout, a distinct ridge down the back and tail formed by the spinous processes of the vertebre ones single 193-217; C & 47-53, Q 42-54, the anterior ones single

The hemipenis differs from the typical organ (p. 407) in that the lips of the sulcus within the spinose area are quite smooth.

Black above, with an orange-yellow vertebral stripe which may be partly or completely absent; interstitial skin orangeyellow, and this colour may extend on to the scales so as to form longitudinal stripes, particularly on scale-rows 1 and 2; these stripes always distinct in the young. The black colour of the back terminates in a point on the nape, the rest of the neck and the whole of the head being orange-yellow; tail, and usually also the posterior part of the body, orange or yellow; lower parts orange or yellow, uniform or with the shields edged with brown.

Total length: 3 1850. tail 220 mm.

Range. Siam (Ratburi district); Cochin China; Tenasserim (Mergui); the Malay Peninsula and Archipelago. Tirant (1885) records two examples from Nui Dinh (Baria), Cochin China, and there does not seem any reason to doubt his identification. It has not been obtained since in French Indo-China.

310. Bungarus fasciatus.

BANDED KRAIT.

Seba, Thes. ii, 1735, pl. lviii, fig. 2; Russell, Ind. Serp. i, 1796,

p. 3, pl. iii (Bengal).

Pseudoboa fasciata Schneider, 1801, Hist. Amph. ii, p. 283 (based Pseudoboa fasciata Schneider, 1801, Hist. Amph. ii, p. 283 (based on Russell's desc. and fig.—Bungarus fasciatus, Daudin, Hist. Nat. Rept. v, 1803, p. 263; Fayrer, Thanatoph. Ind. 1874, p. 10, pl. ix; Boulenger, F. B. I. 1890, p. 388, and Cat. Sn. Brit. Mus. iii, 1896, p. 366, and Rept. Malay Pen. 1912, p. 198; Primrose, J. Bombay N. H. S. xii, p. 589; Wall & Evans, ibid. xiii, 1900, p. 344; Wall, ibid. xix, 1909, p. 835, and xx, 1911, p. 933, col. pl., and xxx, 1924, p. 22, and Pois. Sn. Ind. 1928, p. 14; Evans, J. Bombay N. H. S. xvi, 1905, p. 519; O. A. Smith, ibid. xxi, 1911, p. 283; Kinnear, ibid. xxii, p. 635; Martin, ibid. same page; M. A. Smith, J. Nat. Hist. Soc. Siam, i, 1915, p. 177, photo; De Rooij, Rept. Indo.-Aust. Archipel. 1917, p. 243; Masson, J. Bombay N. H. S. xxxiv, 1930, p. 256; Pope, Rept. China, 1935, p. 332, pl. 15; Bourret, Serp. Indochine, ii, 1936, p. 385. Shaw & others, J. Bengal N. H. S. xvi, 1942, p. 116.

Bungarus annularis Daudin, 1803, Hist. Nat. Rept. v, p. 265, pl. v (based on Russoll's pl.).

pl. v (based on Russoll's pl.).

Bungarus fasciatus insularis Mell, 1930, Sitz. Ges. nat. Fr. Berlin, p. 325 (Inselindien).

Bungarus fasciatus bifasciatus Mell, 1930, Sitz. Ges. nat. Fr. Berlin, p. 325 (Yao-shan, Kwangsi Prov., China).

Scales in 15 rows throughout. A prominent ridge down the back and tail formed by the spinous processes of the vertebræ; tail ending bluntly, usually more or less swollen at the tip. V. 200-234; C. 23-39.

Alternately banded with black or purplish-black, and yellow or buff, the black bands being as broad as their interspaces or 412 ELAFIDÆ

a little broader, a large black mark on the nape continued in a point on the head to between the even, and bordered on each side by vellow, the rest of the top of head brown with yrlow mottlungs, sometimes the yields bands have a median stuppling of black; sometimes the black bands are not complete below, in specimens from the Malay Penn will at the yellow bunds are very pale, sometimes almost white Length specimens over 1890 mm in length are rare. One

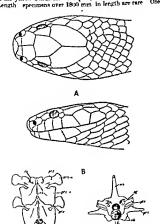


Fig. 131—A. Dornal and lateral views of head of Bioingorus carelless (B.M. 93 I 14 II) B. Dornal and hind views of vertebris of B favorous:

hyp hypepophysis as neural spine, prz. presygapophysis, prz. s. presygapophysisl expansion, ptz. postsygapophysis, ptz. s. postsygapophysis expansion, sg., sygantrum, ss. sygapome; to ferric hysis expansion, sg., sygantrum, ss. sygapome;

recorded by me from Siam measured 2020 mm. in total length, tail 150 mm.; O. A. Smith (1911) records one 7 feet long

(2125 mm.).

Range. The whole of the Indo-Chinese subregion; the Malay Peninsula and Archipelago; Southern China. In the Indian Peninsula it is confined to the north-east; Kinnear (1913) records it from as far south as Hyderabad, and Stone (1922) from Oudh in the United Provinces. Wall (1930) records it from the Godavari and Mahanadi Valley, Bihar and Orissa.

The Banded Krait is not uncommon in the Indo-Chinese subregion, frequenting the plains and open country, often in the vicinity of human habitations. It has been obtained in

Burma at an altitude of 5.000 feet.

The marked vertebral ridge of this snake has earned for it in Siam the name of "ngu sam liem," the triangular snake.

Col. Evans (1905) records the brooding habits of this snake. The eggs measured 2.5×1.5 mm. in size, and the hatchlings

320-340 mm. in length.

Wall (1909) records that a bullock bitten by a Banded Krait died "about 20 minutes or so later." On the other hand (1911) he states that the toxicity of the venom by direct experiment has been estimated to be 7 to 14 times less than that of cobra venom, and that most of the Burmese affirm that the Banded Krait is not poisonous. There are no authentic records of human beings having been bitten.

311. Bungarus cæruleus.

COMMON INDIAN KRAIT.

Russell, Ind. Serp. i, p. 2, pl. i (Vizagapatam). Pseudoboa czerulea Schneider, 1801, Hist. Amphib. ii, p. 284 (based seudoboa cærulea Schneider, 1801, Hist. Amphib. ii, p. 284 (based on Russell).—Bungarus cæruleus, Boulenger, F. B. I. 1890, p. 388 (in part), and Cat. Sn. Brit. Mus. iii, 1896, p. 368; Fayrer, Thanotoph. Ind. 1874, p. 11, pl. x; Cholmondeley, J. Bombay N. H. S. xviii, 1908, p. 921; Pitman, ibid. xxvi, 1919, p. 636; Prater, ibid. xxvi, 1919, p. 684; O. A. Smith, ibid. xxi, p. 283; Wall, ibid. xviii, 1907, pp. 101 and 716, col. pl. viii, figs. 1, 2, 3, 5, and xxii, 1913, pp. 19, 401, maps, and xxii, 1914, p. 808, and xxvi, 1919, p. 575, and Pois. Sn. Ind. 1928, p. 11, and Sn. Ceylon, 1921, p. 437; Ingoldby, J. Bombay N. H. S. xxix, 1923, p. 130; Schmidt, Pub. Field Mus. N. H. (Zool,) xii, 1926, p. 172; Murphy, J. Bombay N. H. S. xxxiii, 1929, p. 722; Fraser, ibid. xxxix, 1937, p. 486. p. 722; Fraser, ibid. xxxix, 1937, p. 486.

Boa lineata Shaw, 1802, Gen. Zool. iii, p. 356 (based on Russell). Bungarus arcuatus Dum. & Bib. 1854, Erp. Gen. vii, p. 1272

(India: Paris).

Bungarus sindanus Boulenger, 1897, J. Bombay N. H. S. xi, p. 73, pl. (Sind: London); Pitman, ibid. xxii, 1913, p. 636; Wall, ibid. xvii, p. 68, and xviii, 1908, p. 716, and xx, 1911, p. 1041, and xxii, 1913, pp. 402 and 808; Ingoldby, ibid. xxix, 1923, p. 130.

Bungarus candidus, Wall, 1907, J. Bombay N. H. S. xviii. p. 122. and xxx, 1924, p. 22 (in part); Prater, ibid. xxx, 1924, p. 174. Bungarus candidus cæruleus, Bourret. 1936, Serp. Indochine, p. 389.

Scales in 15 or 17 rows. V. 194-234; C. 42-52.

414 ELAPID W.

Black or blush black above with narrow white cross-hars, usually arranged more, or less distinctly in pairs they are least distinct on the anterior part of the body and may be entirely absent there. In the young the lands are complete in old individuals they are composed of a error of connected spots usually a particularly large apot being on the vertibural region on the sides of the body the bars may or may not wden a white precoular spot usually present upper lp and lower parts white.

Two forms of colour pattern can be distinguished -

I The transverse bars are narrow and do not or do not greath widen on the sides of the body there are no vertebral spots.



Fig 124.—Map showing distribution of Burgarus caruleus [3 India not included] B andanus and B well

II The transverse bars are always distinct and widen on the sides of the body a vertebral spot is always present. All the specimens of sindanus that I have seen allow it is form.

laration. A section as the large sensitive as a contract of the contract of th

Wall has shown that B sindamus is not spec fically distinct from B caruleus The former with 17 scale rows at mid body occurs chiefly in the desert regions of Sind and Rapputana where it is sa d to be common but not to the exclusion of the typical form. The range of the two forms is shown in the

accompanying map.

Six specimens from the Andaman Islands have the following characters: Seales in 15 rows throughout. V. 192-200; C. 40-46. Black above, with narrow white equidistant crossbars, 40-46 in number, on the body; these are equally distinct throughout the body, and have no vertebral spots. All the specimens are juvenile or half-grown.

Total length: 1200, tail 150 mm. Specimens up to 5 feet in length have been recorded, but they are rare. In the northern parts of India it grows larger than in the south.

According to Wall the male grows to a larger size than the

female.

Eggs are laid in April and May, and the young emerge during May, June and July. At birth they measure 260-280 mm. in length; they grow nearly a foot in the first year of life, and another foot or more in the second and third (Wall).

Range. India, as shown in the map; Ceylon. Common in

many parts of India.

Wall (1928) writes: "Though essentially a snake of the plains, I have obtained it in Almora at an altitude of 5,400 feet, and have other records exceeding 5,000 feet. It is very rare in Ceylon. It is the only Krait found in Peninsular India south of the Ganges Basin."

312. Bungarus ceylonicus

CEYLON KRAIT; KARAWALA.

Bungarus ceylonicus Günther, 1864, Rept. Brit, Ind. p. 344 (Ceylon; London); Boulenger, F. B. I. 1890, p. 388, and Cat. Sn. Brit. Mus. iii, 1896, p. 367; Green, Spol. Zeyl. 1905, p. 158; Wall, ibid. vii, 1911, p. 157, and Sn. Ceylon, 1921, p. 451, figs., and Spol. Zeyl. xi, 1921, p. 402, and ibid. xiii, 1924, p. 86, and J. Bombay N. H. S. xxx, 1924, p. 22, and Pois. Sn. India, 1928, p. 17.

Scales in 15 rows throughout. V. 219-236: C. 32-42.

Black above, with from 15-21 white cross-bars which are narrow on the vertebral line and widen on the sides of the body; in the young they are well defined, but in the adult are broken up into spots and often indistinct; lower parts uniform white in the juvenile, alternately black and white in the adult. Hinder part of head white in the young.

Total length: 1000; tail 95 mm.

The young when born measure 230-260 mm. in length.

Range. Peculiar to Ceylon, where it is common. Found generally in hilly districts but at no great altitude, seldom ascending above 3,000 feet.

313 Bungarus multicinetus

MANY BANDER KRAIT

Busparus multicinctus Bivth 1961, J A B Bengal, xxix, p 38 (Army type losts, Wall, Poss Sn Ind. 1932, p II, and J Bombay V H S xvin, 1968, p 115, col pl vin, f 4 and xxx 1924 p 23, Svmna thad xin, 1940, p 197. Bungarus multicenctus multicenctus, Pope, Rept. China, 1915. p 335

B ingurus caruleus Stoliczka 1870, J. A. S. Bengal, xxxlx p. 209. Boulenger F B L 1830 p 353 and Cat Sn. Brit Mus. in, 1836.

Bungarus candidus m streinetus Bourret, 1916, Berp Indochina, p 390

Scales in 15 rows throughout V. 209-228 : C 44-54, for

specimens from the Indo-Chinese region Black or blush black above, with from 27-48 white cross-

bars on the body and 7-13 on the tail, they usually expand laterally, and on the fore-part of the body are farther apart from one another than on the hinder part, the median portion of each bar may be spotted with black. Head dark brown or black above, upper hip and lower parts white, tail below mottled and marked with dark brown

Paration A juverule (Brit Mus Coll.), said to have come from the Manson Mts . Tong King, has 24 comparatively broad white cross-bars on the body and 6 on the tail; the whole of the head, except the anout, is white Another example, m Pans, from Upper Laos, has the temporal regions white

Total length 1100, tail 145 mm Range Burms (Fort Hertz, Myanngma, Maymyo, Toungoo, Rangoon, Pegu), Haman, Hong Kong and S China, Formosa

314 Bungarus candidus

MALAYAN KRAIT

Seba, Thee, 1735, u. pl lava, fig 4 Coluber cancedus Lann Mus. Adolph. Fred 1754, p. 23, pl. wafig 1 and Syst hat 10th ed 1758, p 223 (India).—Bargaria ng I and Syst Ast 10th ed 1758, p. 223 [India]—Bargorie consider Boulouper, Cat. 80 Ret Mus m. 1859., p. 386 in parish Wall J Bombay N H S xviii, 1008, p. 135, p. 14 vii., \$8 C. Vois Sin Ind 1938, p. 12. Boulonger, Rept Makay Fen. 1915, p. 109. de Rooij Hepf Indo-Austral, Archipel In. p. 244; Busperser area Hist. Soc. Sam. vi. 122., p. 25 xviii. Historie Sam. vi. 122., p. 25 xviii. Historie Grant, 1250, F. B. 19 p. 25 xviii. Historie Grant 1950, F. B. 19 p. 25 xviii.

Scales in 15 rows throughout V 209-219 C 40-50, for specimens from the mainland of Asia

Black or blush black above, with from 20-25 broad white cross-bars on the body, and 7-10 on the tail; on the fore part of the body the bars are narrower than their interspaces, on the hinder part of the body they are of about the same width, the median portion of each white bar is spotted or speckled with black. Head black above, the nape sometimes with a light indistinct Λ-shaped mark; upper lip and lower parts white; tail spotted with dark brown below.

Total length: 1070, tail 135 mm.

Range. S. E. Siam; Annam; the Malay Peninsula; Sumatra, Java, Celebes.

I know of 4 specimens from the Indo-Chinese region (Sriracha, S.E. Siam; Koh Kut, an island in the gulf nearby; Thua Lun, S. of Hué, Annam; and one in the Natural History Museum, Paris, labelled Annam).

315. Bungarus magnimaculatus.

Bungarus caruleus, Wall & Evans, J. Bombay N. H. S. xiii, 1900, p. 343.

Bungarus caruleus var. magnimaculatus Wall & Evans, 1901, J. Bombay N. H. S. xiii, p. 611 (Meiktila, Upper Burma: London)

Bungarus magnimaculatus, Wall, ibid, xviii, 1908, p. 715, and xxx, 1924, p. 23, and 1925, p. 820, and Rec. Ind. Mus. 1909, p. 147, fig., and Pois. Sn. Ind. 1928, pp. 11, 16.

Scales in 15 rows throughout. V. 214-235; C. 40-48.

Black or bluish-black above, with 11-14 very broad, light cross-bars which are as broad as, or broader than, their interspaces; the light bars are composed of an almost equal mixture of black and white, the black being confined to the central portions of the scales, the white to the margins except those of the vertebral scries, in which the colours are reversed; a white preocular spot more or less distinct; lower parts white.

Total length: 1300; tail 150 mm.

Range. Burma (Meiktila, Monywa, Hmawbi, Myingyan, Shwebo, Minbu, Pyawbwe).

316. Bungarus niger.

BLACK KRAIT.

Bungarus niger Wall, 1908, J. Bombay N. H. S. xviii, p. 715 (Tindharia, E. Himalayas; London), and xix, 1909, pp. 355 and 838, pl. —, figs. 4–7. and xxx, 1924, p. 23, and Pois. Sn. Ind. 1928, p. 17; Shaw & others, J. Bengal N. H. S. xvi, 1942, p. 119.

Scales in 15 rows throughout. V. 216-231; C. 49-56. Uniform black or bluish-black above, white below, with a more or less distinct dark mottling at the bases of the ventral and subcaudal shields.

Total length: 1200, tail 135 mm.

Range. E. Himalayas (Darjeeling district); Assam (Dibru-

garh, Sadiya, Sibsagar and Garo Hills).
Vol. 111.

317 Bungarus lividus

LESSER BLACK KRAIT

Busqurus I cul as Cantor 1839 F Z 8 p 32 (Assam col sketch n Bodie an L brary no 1) Boslenger F B I 1899 p 338 and Cat 88 Br J Mm 1 1896 p 370 Selater J A 8 Dongal, Ir 1891 p °40 Wall, J Bombay W H S xvii 1908 p 14 and x 1809 p 33s and 83 p 1 — 65 8 and xx 190 p 33s and xx an l xxx 19 4 p 23 Shaw & others, J Bengal N H. S xvi 194 p 118

Scales in 15 rows throughout the vertebral series not or but feebly enlarged not broader than long in the middle of the body shaped like the adjacent scales V 200-221 C 35-43

Colour as in miger

Total length o 1000 tail 120 mm

Re ge Bengal (Rungpore Jalpa guri and Darjeeling dis tricts) Assam (Dibrugarh)

As there has been confusion between this and the preceding speces the records of localities given here are only for those specimens that I have examined

318 Bungarus walli

WALLS KRAIT

Bungar wwalls Wall 1907 J Bombay N H S zvi p 605 pl (Fyzabad VI Lonion) and xva 1907 p 1 and xx 1905 p 25 p 25 and xx 1924 p 24 and Poss Sn. Ind 1928 p 25 Cholmonderly J Bombay N H S xvi 1908 p 213 Bangarus endanus Annaudale, 1905 J A S Bengal, p 213 Bangarus endanus Ramell 1931 J Bombay N H S xxiv p 1083

Scales in 21 or 19 19 or 17 17 rows V 196-208 C 50-55 Blu sh black above with narrow white transverse bars 65-80 in number formed by series of small apots upper lip and lower parts white tail below suffused with brown no light preocular spot

Total length & 1640 tail 190 2 1500 tail 100 mm Range UP (Fyzabad) Bengal (M dnapore) Bihar & Orissa (Purnea Gaya file Wall)

Genus CALLOPHIS

CORAL STAKES

Calliophis Gray 1834 III Ind. 7 and 1 pl hxxxx bg 1 (type greedie)—Calliophis Günther P Z S 1839 p 79; Boulenger F B I 1830 p 383 and Cat Sn Brit Mun 1896 p 396 Braco physics is F to nger (not of Leporte 1832) 1843 Syst Rept D 28 (type hyper layer) p 28 (type l'hps callspaster W egmas n) Hembis ja us leters 1862 Mon Atad Berlin p 637 (type calls gatter) Boulenger Ca Su Brit Mus 1 1896 p 39° Stejneger Herpet Japan, 1907 p 387

Max llary bone exten I no forwards beyond the palatine

poison fangs followed after an interval by from 0-5 small teeth. Head not distinct from neck; head shields normal, no loreal; nostril between two nasals; pupil round. Body cylindrical, elongate, of almost equal diameter throughout. Scales smooth, subequal, in 13 or 15 rows throughout. Tail short, subcaudals paired, sometimes unpaired in macclellandi.

Closely related to Bungarus, from which it is probably derived.

Range. India; Indo-China; China; Japan; the Philippine

Islands; 12 or 13 species are recognized.

Callophis has been separated from Hemibungarus on the presence or absence of teeth on the maxillary bone behind the poison fangs. A critical examination of the species of Callophis, said to have none, however, shows that all of them, except gracilis and macclellandi, possess teeth. I therefore unite the two genera.

Very little is known of the habits of the Indian Coral Snakes. They are of timid disposition and nocturnal in their movements, often found by day half buried in the earth beneath fallen timber, or among leaves. Their main food appears to

be snakes.

Elaps malabaricus Jerdon, J. A. S. Bengal, xxii, 1853, p. 522, is not recognizable from the description. It has been referred,

with doubt, to Callophis.

Wall, in his 'Poisonous Snakes of India,' ed. iv, p. 22, includes the closely allied genus *Doliophis* (the *Adeniophis* of Boulenger, F. B. I. p. 386) in the Indian fauna. I do not know of any authentic records of the occurrence of this Malayan genus, now known as *Maticora*, within the area covered by this work.

Key to the Species.

Scales in 13 rows.

Scales in 13 rows.	
I. 1 pre- and 2 postoculars.	
A. 6 supralabials	melanurus, p. 420.
B. 7 supralabials.	7.
 One very long temporal shield in contact with 3 labials. 	
1. Preocular touching nasal. V. 174-203; C. 21-31. V. 285; C. 27. V. 234-251; C. 22.	maculiceps, p. 420
V. 234-251; C. 32-44	hughi, p. 421. nigrescens, p. 422.
2. Preocular separated from nasal. V. 212-221; C. 33-34.	beddomei, p. 423.
contact with 2 labials	(p. 423, macclellandi,
II. No preocular; 1 postocular	bibroni, p. 425.
V. 184; C. 31. Scales in 15 rows.	Inflormi v 496
	ACMOUGH IN THU.

2 E 2

319 Callophis melanurus

STENDER CORAL SYAKE

Russell, Inti Serp i, 1796, p. 12 pl. vm (Nerva, Bengal : London). Coluber melanurus Shaw, 1892, Gen. Zool. m. p. 652 (based on Russell s pl }

Pipera Irimaculata Daudin, 1803, Hist Nat Rept vi, p 25 (based on Bussell)—Callophia Irimaculatus, Gunther, P. Z 8 1859. p 83, pl. xvi, fig E and Rept Brit 1nd 1864, p 350; Physica, J Bombay N II See is, 1887, p 248, Boulenger, P B L 1890, p 384, and Cat Sn Bnt Mus III, 1836 p 397, D Abreu, Sn. Nagpur 1916, p 36 and J Bombay N H S xxII, 1912, p. 634, Wall, Sn. Ceylon, 1921 p. 497, and Yos. Sn. Ind. 1928, p. 33 fig. head, and J. Bombay N. H. S. xxx, 1925, p. 244. p 33 fig head, and I sombey a 11.5 222. Willey, and 1908, p 186, Fraser, J Romies N H S EXXIX, 1937, p 400, Frater, fbid EXX, 1924 p 175

Two or three minute teeth behind the poison fangs, eye small, its diameter equal to or less than its distance from the mouth , I preocular, in contact with the nasal, 2 postoculars; temporals I+I, 6 supralabials, 3rd and 4th touching the eye, 5th and 6th in contact with the temporal, 2 pairs of genials, 3 sometimes 4, infralabials, touching the anterior pair, scales in 13 rows V 249-277; C & 33-37, Q 24-27 (India), V 229-257, C 27-37 (Ceylon), A 2

Light brown above, the centre of each scale speckled with brown thus forming a series of longitudinal lines down the whole length of the body, head and neck black above with yellow spots, a pair on the occuput usually distinct, tail with 2 black rings, one at the base, the other near the tip , yellowish below (red in life)

Total length of 335, tail 22 mm

Range Bombas and Dhurwar districts, Malabar, Coimbatore, Anaimalsis, Bengal (Nerva), CP (Nagpur), Ceylon (Trancomalee, Matale, Tissamaharama, Balangoda) A rare snake Found in the plams and in the hills at low altitudes When disturbed, this snake will curl its tail over its back so

as to expose the red of the under surface

The specimen which Russell described and figured in his 'Indian Serpents' is still in an excellent state of preservation (Brit Mus Coll)

320. Callophis maculiceps.

SMALL-SPOTTED CORAL SNAKE

Elaps melanurus (not of Shaw) Cantor, 1847, J A S Bengal, xvi.

p 1027, Pl. 21, fig 6
Elaps maculcops Gunther, 1858, Cat Sn Bnt Mus p 232 (E. Elaps maculcops Gunther, P Z S 1859, Indica: London) — Callophes maculcops, Gunther, P Z S 1859, Indica: London) — Callophes maculcops, Gunther, P Z S 1859, Indica: London) Collophus macualceps, Ginther, Fr. J. Boulers, F. Britan, V. Land, Nat. Mus. lxxvii, 1930, Art. ii, pp. 37; Bourret, Serp. Indochine, 1936, p. 403.

Elaps atrofrontalis Sauvage, 1877, Bull. Soc. Phil. Paris, (7) i, p. 111 (Cochin-China; Paris).

Callophis maculiceps var. univirgatus Smith, 1915, J. Bombay, N. H. S. xxiii, p. 786 (Nong Kai Ploi, C. Siam; London).

Calliophis maculiceps punctulatus Bourrett, 1934, Bull. Gen. Instr. Pub. Hanoi, vi, p. 10 (Cambodia; Paris), and Serp. Indo-chine, 1936, p. 405.

One to three minute teeth behind the poison fangs; eye small, its diameter equal to or less than its distance from the mouth; I preocular in contact with the nasal, 2 postoculars; a single very long temporal shield; 7 supralabials, 3rd and 4th touching the eye, 5th, 6th and 7th touching the temporal; 4 or 5 infralabials in contact with the anterior pair of genials, which are equal to, or a little longer than, the posterior pair. Scales in 13 rows. V. 3 174-186, 2 189-203; C. 3 25-31, 2 21-25; A. 2.

Hemipenis extending to the 10th caudal plate: sulcus not divided; the tip of the organ has a number of small longitudinal folds, the middle and proximal part have three much larger

ones; there are no calyces or spines.

Two colour forms can be defined:-

I. Light brown, reddish or greyish-brown above, with small, distant, sometimes irregular black spots longitudinally arranged along each side of the back, top of head and nape black, the colour interrupted by yellow markings which are variable in size and shape; usually a yellow spot on each side of the occiput; upper lip behind the eye yellow; tail with two black rings, one at the base and the other near the tip; yellowish below (red in life); tail below pale blue or grey.

II. Similar to I, but with a black vertebral stripe and no

black spots on the body (univirgatus).

Total length: 3 435, tail 50; 2 480, tail 33 mm.

Range. Burma and Siam as far north as lat. 20° and south to the Malay Peninsula; Cambodia, Cochin-China.

Form II is known only from Central and S.E. Siam.

A specimen obtained by me in Siam had just eaten a Typh-lops.

321. Callophis hughi.

Callophis hughi Cochran, 1927, Proc. Biol. Soc. Washington, xl, p. 190 (Koh* Tao, Gulf of Siam; Washington), and Proc. U.S. Nat. Mus. lxxvii, 1930, Art. ii, p. 37, fig. head.

Differs from C. maculiceps in having more ventrals, 285, and

in the uniform coloration of the back

Colour in life "reddish-brown, lighter on the belly; underside of tail light blue." Not seen by me. Perhaps an island race of maculiceps.

^{*} Koh=Island.

322 Callophis nigrescens

Callophia nigrescens Gunther 186° Ann Mag hat Hist (3) ix Collephus supersers Günther 1855 Ann Mag vai Het 13) is p. 131 and Rep Bert Ind. 1866 p. 331 pl x ser 6 p Flocker London) Theoball Cas Repé Bret Ind. 1870 p. 215 p. 130 pp. 18 p. 1

N H S xx : p 638 (hhandalla)

Calloph a concurring Bed forms 1863 Madras Quart J Red Sci. vi p 43 fig head (bed wuttum, bilgins London) and J Soc. B b Nat Hat i 1940 p. 310 (reprint)
Callophia profalmentus Beddome 1871 Madras Month J Med.

See iv p 401 (Pirmed Travancors II lis London) and J Soc.

Bb \at llist L 1940 p 3°4 (reprint)

Three or four teeth behind the poison fangs. Lye small its diameter less than its distance from the mouth one preocular in contact with the nasal 2 postoculars, a single very long temporal 7 supralabials 3rd and 4th touching the eve-5th 6th and 7th touching the temporal 2 pairs of subequal genials 4 infralabials touching the anterior pair Scales in 13 rows \ 234 251 C d 35-44 Q 32-36 A usually divided

Hemipenis short extending to the 6th caudal plate spinces throughout the spines being closely set and of almost equal size except at the extreme tip where they are smaller Starting from the base and extending a good way up the organ on either

side of the sulens are two longitudinal folds Three rolour forms can be defined they are ronnected to

one another hy every gradation -

- I Pale reddish or brownish above with 5 black stripes on the body a vertebral and two lateral pairs and 3 on the tail the outermost stripes being on scale-rows I and 2 top of bead black with light regular markings a broad black bar on the nape yellowish below (red in life) upper lip with black vertical marks (pentalineatus) Nilgiri Anaimalai and Travan core Hills
- II Light or dark purplish brown above, with 5 black stripes edged with white the white lines being continuous or regularly broken the brown of the dorsum extends on to the lateral edges of the ventrals head markings as in I Anaimalai Nilgin and Shevarov Hills
- III Blackish or greenish blue above with 3 or 5 black stripes not edged with white. The ground colour may be so dark that the black stripes are obscured (khandallensis) when only 3 striped the outer pair are absent Head markings as in I but usually less distinct (concennys) The Western Ghats as far north as Panchgam

Total length: & 1140, tail 130 mm.

The most elongate of all the Indian species. Beddome writes that it "grows to 3 feet long with a circumference of not more than a man's little finger." Wall states that it feeds entirely on other snakes, and is found only in the hills at between 3,000 and 7,000 feet altitude.

323. Callophis beddomel, sp. nov.

Hemibungarus nigrescens, Boulenger, 1890, F. B. I. p. 384, and Cat. Sn. Brit. Mus. iii, 1896, p. 394, var. A (Shevaroy Hills, S. India; London).

Differs from nigrescens as follows:—Prefrontal in contact with the 3rd labial, separating the preocular from the nasal; fewer ventrals and subcaudals; V. 212-221; C. 33-34; and

in the colour pattern, which is entirely different.

Light purplish-brown above, with irregularly-shaped, black, white-edged spots. These are more or less regularly arranged in two vertebral series, separated from one another by a black vertebral line, or confluent with one another; two lateral series of spots and intermediate ones of much smaller size; whitish below.

Two specimens are known, both females. The type was collected by Col. Beddome in the Shevaroy Hills; the paratype is from Koppa, Mysore, and is in the Indian Museum, no. 13559.

Total length: 565, tail 65 mm.

324. Callophis macciellandi.

MACCLELLAND'S CORAL SNAKE.

Elaps macclellandii Reinhardt, 1844, Calcutta J. Nat. Hist. iv, p. 532 (Assam).—Callophis macclellandii, Günther, P.Z.S. 1861, p. 219, and Rept. Brit. Ind. 1864, p. 349; Boulenger, F. B. I. 1890, p. 385, and Ann. Mus. Civ. Genova, (2) xiii, 1893, p. 327, and Cat. Sn. Brit. Mus. iii, 1896, p. 398; Acton & Knowles, Ind. J. Med. Res. ii, 1914, p. 56; Annandale, Rec. Ind. Mus. viii, 1912, p. 50; Sclater. List Sn. Ind. Mus. 1891, p. 56; Venning, J. Bombay N. H. S. xx, 1910, pp. 342; Wall & Evans, ibid. xiii, 1901, p. 612; Wall, ibid. xviii, 1908, pp. 333 and 780, and xix, 1909, p. 356, and xxii, 1913, p. 639, and xxv, 1918, p. 628, eol. pl., and xxxi, 1926, p. 566, and Pois. Sn. Ind. 1928, p. 31, fig.; Pope, Rept. China, 1935, p. 341, pl. xvi; Bourret, Serp. Indochine, 1936, p. 406, fig. head.

Elaps personatus Blyth, 1855, J. A. S. Bengal, xxiii, p. 298 (Assan).

Elaps univirgatus Günther. 1858, Cat. Sn. Brit. Mus. p. 231

(Nepal; London).—Callophis univirgata, Günther, P. Z. S. 1859,

p. 83, pl. xvii.

Callophis annularis Günther, 1864, Rept. Brit. Ind. p. 350, pl. xxiv, fig. 1 (India; London).
Callophis macclellandi var. nigriventer Wall, 1909, J. Bombay N. H. S. xix, p. 266 (Kasauli, W. Himalayas; London).

Callophia marchellands var gores Wall, 1910 J Bombay h H. S. x x p 842 (Ja pur Amam) and xx 1913 p 639 and xxx, 1923 p 468
Callophia maccicitand var concein Wall 1925 J Bombay H S.

xxx p 8°0 (H ton Kachn Hills Lonion)

No teeth behind the poison fangs Diameter of the eye less than its d stance from the mouth I preocular in contact with the posterior nasal 2 postoculars temporals 1+1 7 supra ish al 3rd and 4th touching the eve 5th and 6th touching the anterior temporal two pars of subequal gen als 3 or 4 infralab als touching the anterior pair Scales in 13 rows Anal d 18° 212 ♀ °08-244 C d 28-36 ♀ 25-33 pa red or rarely some of them unpaired

Hem penis extending to the 6th 8th candal plate forked near the tip sp nose and calvenlate throughout the spines are short set on the margins of the calyces and of almost equal size except near the tip where they are smaller



Fg 135 -Callophes maclelland

There are many colour forms but the connections between them are easily recognized -

I Red or brownish above with regular narrow black transverse bars which may or may not reach the belly a series of small black spots on each side of the back between the bars may be present head black above except for a broad white transverse bar behind the eyes tip of the anout often light in colour yellowish below with black cross-bars or quadrangular spots The common form Darjeeling Assum Burma north of the Abor country and south to the Pegu Yomas Tong Aing Annam & China Hainan Formosa Common in the hills of Assam

H S m lar to I but with a black vertebral stripe and the transverse bars restricted to the s des of the body or absent altogether (univergatus) E Himalayas as far west as

III S milar to I but with the black cross bars reduced to transverse vertebral spots and a series of larger spots along the middle of the belly (gorei) Assam Upper Burma

IV. Uniformly coloured above and below, except for a black ventral stripe and three rings on the tail (nigriventer).

Kasauli; known from the type-specimen only.

V. Purplish-brown above, uniform or with 3 longitudinal series of small indistinct black spots; belly with large black subquadrangular spots (concolor). Two specimens are known. Total length: 3 635, tail 70; \$2780, tail 60 mm. Wall gives

a total length of 812 mm.

The range of the ventral count given here, 182-244, is found in two specimens in the British Museum from Assam and Darjeeling respectively. There seems no reason, therefore, to regard the Formosan form, based on a high ventral count, as

Wall (1918) has given a good account of this snake, and his colour-plate, of what is one of the most beautiful of all the Indian snakes, is excellent. Macclelland's Coral Snake is found only in the hills, generally at between 3,000 and 6,000 feet altitude, and in country that is well forested. In disposition it is quiet and inoffensive. It feeds chiefly on snakes. gravid female examined by him at Shillong, in August, contained 6 eggs, the embryos partially developed; another specimen (1926), killed on July 8th at Maymyo, contained 14 eggs.

325. Callophis bibroni.

Elaps bibroni Jan, 1858, Rev. & Mag. Zool. x, p. 526, Prodr. pl. B, 1859 (India; Paris), and Icon. Gen. xliii, 1873, pl. ii, fig. 1.—
Callophis bibronii, Boulenger, F.B. I. 1890, p. 386, and Cat. Sn. Brit. Mus. iii, 1896, p. 399; Wall, J. Bombay N. H. S. xxvi, 1919, p. 577, and Pois. Sn. Ind. 1928, p. 30, fig.
Elaps cerasinus Beddome, 1864, P. Z. S. p. 179 (Manantoddy, Malabar).—Callophis cerasinus, Beddome, Madras Quart. J. Med. Sc. xi. 1867, p. 15, pl. ii. fig. 5, and J. Soc. Bib. Nat. Hist.

Sc. xi, 1867, p. 15, pl. ii, fig. 5, and J. Soc. Bib. Nat. Hist. i, 1940, p. 316 (reprint).

One minute tooth behind the poison fangs. Eye very small, its diameter about twice its distance from the mouth; no preocular, the prefrontal touching the eye; I postocular; a single very long temporal; 7 supralabials, 3rd and 4th touching the eye, 5th, 6th and 7th touching the temporal; 1st infralabial much elongated, forming a long suture with its fellow; anterior pair of genials small, much shorter than the posterior pair, in contact with the 3rd and 4th infralabials; 4th infralabial much larger than the others. Scales in 13 rows. V. 219-227; C. 25-38.

Hemipenis extending to the 7th caudal plate, spinose throughout; the spines are smaller at the tip and gradually increase in size as they reach the proximal end of the organ.

Cherry-red to dark purplish-brown above, with black cross-bars; belly red, with large black spots which may unite with

426 ELAPIDÆ

the dorsal bars and form complete bands round the body head above black in front red behind

Total length \$ 660 ta 155 mm Wall records one 775 mm.

in learth
Range The Western Chats as far north as Coorg

32r Callophis kelloggi.

Collophis macchillord (not of Reinhardt) Bouleager 1899 P.Z.8 p. 165 (huatan, Pukren China) Hembungurus kilopa Pope 19+8 Amer. Mos. Nov. no. 320 p. 6 (Chingan Haren Fukren Prov., 8 China. New York) and Rept.

(Chungan Histor Fuksen From Luma Item 1994) Chung 1935 p 314 fg head Callophus wong, Fan, 1931 Bull, Dept B ol. Coll. Scn. Sun Yat Sen

Un v 11 p 1°s fig (Loh-mang Kwangui Prov)

Callophia wong ionkingnas Bourret 1935, Bull, Geo, Instr Pub

Hanos, April, p °6 (Tam-dao Tong King Paris pot seen by

Hanos, April p "6 (Tam-dao Tong Aing Fall)
mel and Serp Indochuse 1936, p 4th 6g head.
Like m d llands in general scalation differing as follows—

Disc m of llands in general scalation differing as laborated from the even equal to its distance from the mouth temporals 1 + Scales in 15 rows 1 184 C 31

Predicts brown above with 1"48 narrow black cross-bars family of the deal with white pale of marbow below with standing the bonder of the ventrals they correspond in position with the dorsal bars head black above with a light cresenter mark across the strout in front of the even and a A-shaped one on the back of the head its apex on the frontal the arms extending to behind the month.

Pope has placed soony under killogs. The description of lonkinens s d flers slightly in colour pattern from that given for killogs, but sorces entirely with the individual recorded by B ulencer under nachthar I from Fuksen and which love has placed and in this under Itilogs. The scale counts are from the Tong King spec men. They differ from the Chinese wh. has regiven by Pope as 3, 191 (90 C 29.38).

Genus KAJA

Voja Laurent I 68 Svn Rept p 9t (type Coluber noja Limn.) Uzens Wagler 183 Nat Synt Amph b p 173 (type Coluber Aoje Linn.)

Ape Linn;
Ape Linn;
Ape Linn;
Ape Wagkr 1 c s.p 1"3 toon Laurenti, 1 68) (trpe Apps 200)
Tomyre Eichreid, 1831 Zool Spee u.p 171 (trpe armed)
Homodryos (non Hubert 1806) Can or 1836 Aust Res. xix,
p 23 litra laurenty

p 87 (type howned)
Dendrospus F sugger 1843 Eyet Rept p *5 (type banggras)
Femilologic Gunther 1858, Out Col. Sp. Brit Mus. p. 222 (type

Ophophogus Gunther 1864 Rept But Ind. p 341 (type slaps) Maxillary bone extend ng forwards beyond the palatine NAJA. 427

poison fangs followed by from 1-3 small teeth. Head not very distinct from neck, dilatable in the Asiatic species, the anterior ribs being elongate. Eye moderate, pupil round. Nostril between an anterior and a posterior nasal; head shields normal, except the loreal, which is absent. Scales smooth, disposed obliquely, in from 13–25 rows on the body : subcaudals usually paired.

Range. Southern Asia and Malaysia; Africa.

Some 12 species are known; two inhabit the Oriental Region.

Ken to the Species.

Scales in 19-25 rows; no occipital shields naja, p. 427.
Scales in 15 rows; a pair of large occipital shields hannah, p. 436.

327. Naja naja.

Indian Cobra; Cobra,

Naja naja naja.

Russell, Ind. Serp. i, 1796, pls. v and vi, and ii, 1801, pls. i and

Coluber naja, Linn. 1758, Syst. Nat. 10th ed. p. 221, based on Seba, Thes. i, 1734, pl. 44, figs. i and ii, pls. 85, fig. i, and 89, figs. 1-4, and 90, figs. 1-2, and 97, figs. 1-4 (habitat in India); Andersson, Kungl. Sv. Vet.-Akad. Handl. xxiv, 1899, 4, p. 17.— Naja naja, Prater, J. Bombay N. H. S. xxx, 1924, p. 175; Wall, ibid. 1925, pp. 242 and 820, and xxxi, 1926, p. 565, and Pois. Sn. Ind. 1928, p. 23; Anon., J. Bombay N. H. S. xxx, 1925, p. 705; Leigh, ibid. xxxi, 1926, p. 227; Tscherbakoff, ibid. xxxiii, 1935. p. 321; Bourret, Serp. Indochine, 1936, p. 394; Smith, J. Nat. Hist. Soc. Siam, xi, 1937, p. 62; Barker, J. Darjeeling N. H. S. xi, 1936, p. 81; Inglis, ibid. 1937, p. 118. Naja lutrescens Laurenti, 1768, Syn. Rept. p. 91 (India; based on Seba, i, pl. 44, fig. 1).

Seba, i, pl. 44, fig. 1).

Naja fasciata Laurenti, l. c. s. p. 91 (India; based on Seba, ii, pl. 89, fig. 3). Naja siamensis Laurenti, l. c. s. p. 91 (Siam; based on Seba,

ii, pl. 89, figs. 1-2). Naja maculata Laurenti, l. c. s. p. 91 (India; based on Scha, ii,

pl. 90, fig. 2). Coluber cacus Gmelin, 1788, Syst. Nat. i, p. 1104 (India; based on

Seba, ii, pl. 90, fig. 1). Coluber rufus Gmelin, l. c. s. p. 1105 ("Brazil"; based on Seba,

ii, pl. 89, fig. 4).

Naja tripudians Merrem, 1820, Tent. Syst. Ampliib. p. 144 (subst. (aja tripudians Merrem, 1820, Tent. Syst. Amphib. p. 144 (subst. namo for C. naja Linn.); Gunther, Rept. Brit. Ind. 1864, p. 338; Fayrer, Thanatoph. Ind. 1874, pls. i to vi; Boulenger, F. B. I. 1890, p. 391, fig., and Cat. Sn. Brit. Mus, iii, 1896, p. 380, and Rept. Malay Pen. 1912, p. 201; Brook-Fox, J. Bombay N. H. S. xvi, 1905, p. 369; Bannerman, ibid. xvi, 1905, pp. 363. 638, and ibid. xvii, 1907, p. 1031; Bannerman & Pocha, ibid. xxi, 1912, p. 1337; Wall, ibid. xviii, 1908, p. 126, and xix, 1909, p. 355, and xxii, 1913, p. 243, col. pl. and p. 550, and xxvii, 1919, p. 575, and xxviii, 1922, p. 553, pls. hood patterns, and Sn. Ceylon, 1921, p. 459; Barnard, Spol. Zeyl. vi, 1910, p. 174; Bobeau, ibid. 1913, p. 16; Smith, J. Nat. Hist. Soc. Siam. i, 1914, p. 179, photos: Acton & Knowles, Ind. J. Med. Res. 1914, p. 179, photos: Acton & Knowles, Ind. J. Med. Res.

1914, p 46, Levett-Yeats, J Bornbay N. H S xxiv, 1916, p 371, O Brien, ibsl xxxx, 1923, p 303, Charpurey, ibid. xxxv, 1931, p 1085, and xxxx, 1932, p 273; Miller & Pagden, Nature 1931, p 706, Jennison P Z S 1931, p 1413; France, J Bombay N H S, xxxix, 1937, p 493

Aasa nana cal var polyocellata Deramyagala, 1939, Ceylon J Sci.

B xxi p 233, photo (Polonnaruva, N Central Prov., Ceylon;
London)

Naya naya kaouthya

Naja kaouhia Lesson in Ferusaso, 1831, Bull Sci Nat xxv, p. 122, and in Relang Voy Ind. Orient Rept Sept 1832, p. 312, pl. 2 (Bengal) - Vaja naja kuouthia, Smith, Rec Ind Mus zhi, 1940, p 485

Note tripudians ver fasciate (not of Laurenti) Hardw & Gray 1834 Ill Ind Zool u, p 78 (Dum-dum, Bengal; Hardwicks) eketch no 175)

Aaja Iarwaia Cantor 1839 P Z S p 32 (Calcutta, Assam'i coloured sketch in Bodleian Library, no 14)

Naja atra Cantor, 1842, Ann Mag Not Hut Ix, p 482 (Chusan 'island) —Naja naja aira, Stejneger, Bull U.S. Nat. Mus no 58, 1907 p. 394, Popo Rept China 1935, p. 348, pl. xvi, figs 4 d and e

Naja impudiane ver ecopinucha Cope, 1859, Proc Acad Net Sci

I hilad p 343 (Canton River)

Asja inpudians, Stohenka, J. A. S. Bengal, 1870 p 212, Flower,
P. Z. S. 1899, p. 690, Wall, J. Bornbay N. H. S. xviii, 1908,

p 330, and Ibid xiz, 1910, p 840 Naya tripudiane var unicolor Martens, 1878, Preuse Exp Oet Asa Zool 1 p 382 (China and Sumatra)

Nasa Impudsane var cardes Wall, 1913, J. Bombay N. H. S. XXII. p 247 (Surms) Noja trapudiane var sagittifera Wall, 1913, J. Bombay N. H. S.

XXII P 248 (Andamen Islands)

Naja naja oziana.

Tomyrus axinin Frehweld, 1831, Zool Spec in p 171 (Transcaspie), and Faun Carp Cauc. 1841, p 104 pl xx — Arga axinin Soluenter Tr Zool Soc (2) v. 1889 p 103, pl xi, fig 2 Naja stripudana, Stolietka, J A S. Bengal, xxxx, 1810, p 211, Wall ... Wall J Bombay N H 6 mx, 1910, p 1001, fig , and xx, 1911, p 1042 and xxi, 1911, p 141

Naja naja, Nikolsky, Faune de la Russie 1916 p 204

Under the typical form are listed a large number of references that deal with the species in general and not with any particular race

Poison fangs followed by a small tooth, sometimes absent Eye moderate, its diameter equal to or a little less than its distance from the mouth, nostral large, vertically elliptic; frontal usually longer than broad, with truncate anterior margin, internasals as long as or a little shorter than the prefrontals, 1 preocular, usually in contact with the internasal, 3, rarely 2, postoculars, 7 supralabials, 3rd highest, 3rd and 4th touching the eye, temporals 2+3, 4th and 5th infraiabials largest, usually with a small triangular scale*

NAJA. 429

between them on the oral margin; two pairs of genials, the anterior a little larger than the posterior, in contact with 4 infralabials; posterior pair partly or completely separated by a scale. Scales smooth, oblique, the outer 2 or 3 rows larger than the others.

Hemipenis extending to the 10th caudal plate, forked opposite the 7th; it is divided into three areas, which are fairly abruptly defined from one another, namely a proximal one beset with minute spines, a median one with very much larger spines, and a distal calyculate area, the cups being poorly developed and having spinose edges. The median area is further interrupted by a narrow, transverse, smooth area, which does not, however, intercept the sulcus or its two adjacent longitudinal ridges.

Total length: 1350 to 1500, tail about 230 mm. Many larger specimens have been recorded, but they are rare. Wall

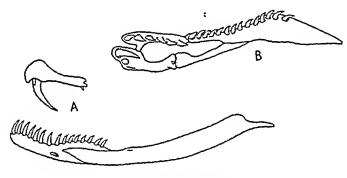


Fig. 136.—Naja naja.

A. Maxilla and mandible. B. Palato-maxillary arch.

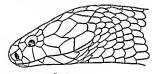
(1913, p. 248) mentions one from Ceylon which was 7 feet in length. It appears to be the record. There is no marked

difference in size between the sexes.

Several attempts have been made to define races for the Indian Cobra, none with entire success. Boulenger's varieties (Cat. iii, p. 381) ignore geographical distribution. Wall, utilizing scale-counts, has divided the asiatic mainland form into five races (Handlist Sn. Ind. Emp., 1925), and my own counts, based largely on the same material, agree closely with his. They are summed up in the table. It will be seen that the highest body-count occurs in Ceylon, and that there is a gradual reduction in the number of scale-rows as the species extends north in the Peninsula of India. From northern India, through Indo-China to China, the difference is slight. The overlap between the areas is considerable. The greatest

430

reduction in scale rows takes place in the Malayan region, the Borneyn form having only 15 at mid body. The enormous amount of variation, both in coloration and in colour pattern which is found in Cobras, even in individuals. from the same district is well known the variation from youth to age is also considerable the tendency being for the markings to become obliterated as age progresses. Individuals which have light or dark hands cross bars variegations or reticulations upon the body are farily common and do not appear to be restricted to any particolar area. They are more common in India than in Indo-China. Any attempt to define races on general coloration is hopeless. The pattern upon the hood, however is with certain reservations, constant, definite types can be distinguished and they can be correlated with geo-graphical distribution. Many departures from the typical



F g 137 - Voja noja

picture through disjutegration of the pattern will be found but the stages which have led up to them can be traced, many individuals also even juveniles, have no markings at all A racial arrangement of the species based on hood pattern seems therefore to offer a better solution than one based on scale counts for it is in accordance with natural faunal areas

Three types of hood pattern can be defined namely, the well known spectacled or binoccllate form inhabiting the whole of the Pennsula of India (forma typica) an O-shaped or monocellate form ranging from Western Bengal across Indo-China into (hina (Lacuthia), and a barred form found in the extreme north west of India and extending into Trans caspia (oxiana)

In the following descriptions only the coloration of the young is given for only in them can any constancy be found.